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Goiter: Observations Based Upon the Surgical Treatment of 600 Cases.

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In considering the almost marvelous progress of surgical art in the last thirty years, it seems to have developed in certain lines during special periods. The present decade has been devoted especially to the study of the glands, and of these various glands none is more interesting than the thyroid.

This gland shows very early in the development of the embryo. It is formed from three areas or buds, two lateral and one median. The median bud develops between the two halves of the tongue, and invaginates, extending down the neck as a tube—the thyroglossal duct. In the fifth week the developing hyoid bone crosses the line of the duct. The upper portion obliterates, leaving an opening at the back of the tongue—the foramen cecum. The lower portion forms the upper poles, isthmus, and also pyramidal lobe when it is present. The seventh week sees the union with the lower poles which develop from lateral buds in the fourth brochial cleft. At times the median portion

does not descend but remains in the tongue developing a tumor known as the lingual thyroid. In this way accessory thyroids may occur. In the vertebrates the union of the various sections of the thyroid does not occur, and this to some extent is not an infrequent anomaly in man. The united gland is somewhat the shape of a horseshoe, the concave border being up. It rests upon the front and sides of the trachea to which it is firmly attached. The thyroid is inclosed by a fibrous capsule which also aids in fixing the organ to the thyroid cartilage and tracheal rings. The capsule which covers the glands divides behind in such a manner that it not only covers the gland posteriorly, but passes behind and between the esophagus and trachea to unite with similar structures upon the opposite side. With such encapsulation, we can readily see how the growth of the gland or the development of tumors within its tissues may cause serious pressure and distortion of the structures in immediate relation to it. The weight of the gland in the healthy adult is from one to one and one-half ounces.

The function of the thyroid is a complex one. Among the various functions of the gland are its dilating effects upon the capillaries. In over absorption the metabolism of the body is often affected by causing loss of weight, thus in the obese it is a remedy to reduce overweight. Over secretion causes a warmth of skin, redness and excessive sweating. Tachycardia is developed also from over feeding of the gland secretion, one cause being from the large proportion of blood in the capillaries.

The parathyroids discovered by Sandstrom in 1880 were supposed to be accessory thyroids until 1897, when it was shown that they were most important structures, having a separate function from the thyroid and to seemingly control to a great extent the nervous equilibrium. In later life they are apparently more important than the thyroid, as their removal causes death from teteny. The loss of the thyroid can be to a great extent supplied by feeding the gland, but feeding the gland is not so successful for teteny. Experimental work is now being conducted to develop a parathyroid serum.

Hypothyroidism or loss of function of the gland, the opposite condition from hyperthyroidism as occurring in exophthalmic goiter, we see in myxedema in which the opposite conditions also prevail; harsh dry skin with open pores, development of fatty deposits in pads over

shoulders and clavicle, broadening of features and change of facial expressions, while general dulness or sluggishness of intellect and increase of weight is common. The mother's thyroid, causing an internal secretion, has much to do with the fetal capillary circulation.

A child born without a healthy thyroid fails to properly develop either mentally or physically. The secretion of the suprarenal capsule, unopposed, apparently serves to restrict all capillary growths, and the nutrition supply to the brain cortex as well as to the rest of the body. Secretions often make wonderful progress from the transplanting of the thyroid tissue, or from feeding the same.

Simple goiter or bronchocelo is a most common occurrence in girls at puberty. The development is seldom excessive and usually subsides unless there be an encapsulated growth in the gland which becomes manifest from the increased circulation. These cases without an encapsulated tumor rarely require active treatment and usually are of but a few months or years duration.

The second period of the development of goiter is during pregnancy. In fact, a moderate enlargement of the gland is one of the favorable signs of pregnancy. Lange has shown that if the gland is not enlarged in a pregnant woman, she will have a tendency to albuminuria. This connection of the thyroid with the generative organs in the female is well marked, as diseased conditions of the generative organs are commonly out of proportion to those possessing goiter, while it is often noted that women have a temporary enlargement just previous to or during menstruation.

Hemorrhage.—Some cases of sudden development of thyroid tumors, accompanied by great pressure and suffocating symptoms, are due to hemorrhage into the gland. Early incision may be required.

Septic conditions affecting the thyroid are rare. The pneumococcus is one of the more common organisms found, and infection is transmitted by the blood stream. Still less common is seen tuberculosis, actinomycosis, or hyatid.

Those thyroids which present small nodules or median smooth and rounded tumors, are practically always encapsulated tumors of fetal

origin, or, "fetal rest" tumors of embryonic thyroid tissue, adenoma, some with cystic change.

Those goiters which develop more in accordance with the normal shape of the gland are commonly known as diffused colloid, or diffuse adenomata, while those with larger retention, accumulation of colloid with irregular contour, are often called follicular goiter.

In speaking of this most interesting condition of the gland we employ the term hyperthyroidism because it expresses the true conditions far better than the terms more commonly used, viz., Graves' disease, Basedow's disease, Perry's disease, or exophthalmic goiter.

The leading symptoms of the disease are increased frequency of pulse, muscular tremor, enlargement of the gland, exophthalmus and general nervousness. In mild cases one or more of the prominent symptoms may be absent, while in severe cases all may be present, as well as gastric crisis, diarrhea and skin pigmentation.

The circulatory change is an increased frequency of the heart action, and is similar to that produced by violent exercise, as is also the muscular tremor. There is such a large proportion of blood in the dilated capillary system that the heart fails in its effort at maintaining circulation because of its lack of material. Remedies like adrenalin which causes contraction of the capillaries will often produce temporarily a marked reduction in the rapidity of the circulation.

The thyroid gland may be enlarged greatly, and yet these marked cases will not show change to palpation.

Exophthalmus which may exist in about 80 per cent. of cases is the most marked feature when present. Kocher notes intermittent spasm of the lids from constant use. Von Graffe's symptom is a lagging behind of the upper lid in looking downward. Stellwag noted the retraction of the upper lid as increasing the width of palpebral fissure which causes the sclera to show above the cornea. Moabius noted a weakness of convergence in looking at near objects. Diplopia, complete immobility, edema of the eyelids and even total protrusion of the eyeball's with dislocation from between the lids, has been noted. We have seen two such cases.

To those of us who have been on the firing line so to speak, of the

surgical side of the subject, it is extremely gratifying finally to see the disease placed upon a scientific basis of cause and effect.

For many years the varieties of treatment, or the remedies used for Graves' disease, were only exceeded in number by the remedies in use as cures for tic doloreaux. These methods were rarely based upon other than empirical statements that they seemed good for, or, that they improved an individual case or two.

The more recent attempts at relief by serum theraphy appear to be based upon good reasoning, and when properly employed has, in selected cases, given satisfactory results.

Operative treatment of goiters in general has in the past been placed under a ban. It was considered an operation to be undertaken only under dire necessity, and, naturally a last resort operation was accompanied by a high mortality. The main points impressed upon students were the reasons for not operating, and the patients were also informed that some hideous skin disease might follow, or, of a surety that they would become "foolish" should the goiter be removed and they survive the operation. Under these circumstances surgical treatment was advised only for patients who were exhausted by their disease, or by the treatment they had received, and surgical aid was given only to those cases who persisted in failing in spite of all methods of treatment. Very often moribund cases were operated upon as a *dernier resort,* and as is usual in the progress of medicine, failures of this kind result either in abandonment or development of methods, improvement in diagnosis, choice and preparation of patients; until today we have presented to us in a large series of cases the wonderfully low mortality of four to six per cent., with all cases relieved and most of them cured.

The statistics of the Kochers, who have long led the world in goiter surgery, report some 250 cases of hyperthyroidism surgically treated. We have operated upon 285. Other operators present a large number of cases, though smaller than the Kochers, and in considering these statistics I say again that it is extremely gratifying to know that we have accepted the fact that there is a similar change in the thyroid, either in part or in the whole of the gland in hyperthyroidism. Practi-

cally it is a "work" hypertrophy and resembles such conditions when experimentally produced. Bauman notes an excess of iodine in the gland and Hunt's biological experiments show an increased quantity of iodine in the blood. Some are manifest cases of hyperthyroidism merely upon observation, having the ocular changes most prominent. Again, we have no eye symptoms but a goiter, while some well marked cases of the disease have no eye symptoms and no enlargement of the thyroid manifest to palpation in the early stages, yet the thyroid has the cell changes common to the gland in this disease.

We consider the disease as one showing marked functional activity as evidenced by the increase of glandular epithelium, either by an increase of cells in the vessicles or an increase in the number of vessicles. There will commonly be seen the hard dry gland of hyperthyroidism, and in those with pre-existing goiter, where we find changes of solid tissue, loss of colloid and vessicles filled with collumnar and cuboidal cells in scattered areas, instead of a general change in the gland as in the preceding form.

There is another not infrequent form often called pseudo hyperthyroidism in which we have those who by reason of the growth of a tumor such as an encapsulated adenoma in the gland, suffer from excessive absorption of their thyroid at irregular intervals. Such patients may suffer from all the ordinary changes of hyperthyroidism for short periods, but they seldom develop exopthalmus yet may have widening of the palpebral fissure, causing apparent exophthalmus. The last-named variety is often overlooked in individuals with encapsulated goiters.

Inasmuch as many cases of hyperthyroidism recover without treatment, and others in spite of treatment, it is perfectly justifiable for physicians to institute treatment on any line, plan, or system which they believe proper. The mistake in the past had been to persist in the belief that some particular drug or treatment would eventually be successful in spite of the downward progress of the patient, thus withholding surgical aid until of necessity the surgical mortality also represents in part what should properly be medical. On the other hand the surgeon should not accept these cases for operation until all the conditions are as favorable as possible for the recovery of the patient. One of the great dangers of the operation is from myocardial change, usually

shown by uneven tension and irregularity in the pulse. No patient should have thyroidectomy performed whose pulse cannot be counted continuously because of uneven tension. Gastric crisis or diarrhea should also lead to the postponement of operation. Ascites and edema of the feet and hands are contraindications. All of the foregoing complications may usually be overcome with suitable treatment; sufficiently so to make some type of operation practicable.

In the preparation of severe cases, we have used belladonna extract with quinine internally, and in certain cases the x-ray is applied over the gland as many times as will be sufficient to check its activity, 20 to 40 exposures usually giving marked relief. The improvement under Roentgen ray may be most pronounced for a time, but is seldom a lasting one. In case the improvement is not sufficient to warrant thyroidectomy, we recommend the method of Prof. Kocher who in these cases ligates one or more vessels of supply (under ether or cocaine) according to the cases, reserving extirpation of the gland for a later period. We have had about twenty cases of this type.

The anesthetic of choice is ether. Very rarely indeed do we find it necessary to use cocaine. The etherization is preceded twenty or thirty minutes by a hyperdermic of 1-6 grain of morphia to allay nervousness and to lessen the necessity for profound anesthesia. With the morphia is given 1-120 of a grain of atropin to relieve the tracheal mucous which may come from ether and the tracheal trauma. It also stimulates the respiration.

The patient is placed in the reverse Trendelenburg posture, which by gravity tends to relieve the upper portion of the body of blood. The incision is the transverse collar, and includes the skin and platysma myoid muscle, the dissection of these structures held together is carried down to the ternum and up to the top of the thyroid cartilage, the sterno hyoid and thyroid muscles are separated in the midline to expose the gland. This separation may be sufficient in small tumors to permit the delivery of the gland, but often it will be necessary to cut across one or more of the group on the side removed to secure a safe working field. They are incised near the upper insertion to avoid injury to their nerve supply, and resutured at the close of the operation. This also breaks the continuous penetrating scar. The posterior capsule of the gland is

brushed back with gauze as the gland is elevated. The superior and inferior thyroid arteries are ligated as they enter through the capsule.

Preserving the posterior capsule tends to prevent injury to the parthyroids which rest behind the intimate capsule of the gland, the injury or removal of which we know may cause tetany. This also preserves the recurrent laryngeal nerve. In over 600 operations for goiter we have seen but one very mild case of tetany of a temporary nature following this method of procedure. Great care must be exercised in ligating the superior thyroid, as a considerable proportion of the deaths following an apparently successful operation are from hemorrhage. This hemorrhage may be due to the including of some fibers of the omohyoid muscle in the ligature which might be dislodged with movements of the neck. Berry allows patients to partially awake from the anesthesia before closing, to prove the hemostasis.

The isthmus is ligated, the wound area burned with carbolic acid and alcohol neutralization, or washed with Harrington's No. 9 solution.

HARRINGTON'S SOLUTION.

Alcohol	640 parts
Water	300 parts
Hydrochloric acid	60 parts
Bichloride	.8 parts

This solution serves to auto wash the wound area with serum and to inhibit lymphatic absorption. Following this, free drainage is instituted, often through a separate incision. The patients are given large saline enemata under slight pressure, if not retained they are given saline subcutaneously. This is repeated several times within the first thirty-six hours. The heart action when very rapid may be improved by the ice bag over this region. Should excessive sweating occur, atropin is administered. Morphia is given, if needed, to diminish excessive restlessness. Hot, moist, boric acid dressings applied over the front of the neck often stimulates serous drainage. The drains are left from two to three days according to their apparent utility. The deaths that occur will usually be within the first twenty hours.

The general nervous restlessness and tremor subside to a remarkable

degree within two days. The pulse may retain from 120 to 170 beats for two days, but drop suddenly on the third day about 20 to 30 beats, and usually is 80 to 110 within six days. The temperature may be elevated two to five degrees for two days following operation when it drops with the pulse.

If the exophthalmus is marked, it will not entirely disappear after operation, but will be greatly improved. Many cases only partially relieved of their symptoms are no more a discredit to the surgical method practiced than when following other forms of treatment, but merely show that not sufficient gland has been removed. These cases should be re-operated and more of the gland extirpated. We are greatly pleased with the result in four cases in which this was done.

These patients are seldom confined to the bed more than three days after operation, and commonly are out of the hospital within a week. Practically all cases are improved over their former condition and most of them are cured. The mortality is constantly decreasing; there were four deaths in the first of our 16 cases, three in the next 30, three in 150 cases, and four in the last 90 cases. Autopsies upon all who died showed marked terminal degeneration of heart, kidney, liver and spleen with cytosis of the thyroid.

In operating upon incapsulated tumors in the thyroid, we have the work well outlined for us by the conditions present. An incapsulated tumor of the gland is not supplying the system with thyroid secretions, therefore, its removal is an advantage in preventing the destruction of the real thyroid. The more nearly the surgeon can enucleate the growth without destroying or removing the thyroid, the more surely will there be only favorable results following the operation. Even enormous cysts should be enucleated, preserving what little thyroid there may still be in the capsule. Unless these tumors are very large and much traumatic serum is expected, drainage is not necessary.

Sarcoma and cancer are the most serious changes to occur in the gland. Such conditions are usually operated too late to give other than a high mortality, and but few permanent cures. While the tracheal pressure is lateral in benign growths, we have noticed that it is the anterior rings that are softened by malignancy. The mortality from benign tumors is very low, practically all deaths being accidental from pneumonia, hemorrhage or sepsis.

Direct Laryngoscopy, Tracheo-Bronchoscopy, and Esophagoscopy With Demonstrations.*

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In the year 1854 Signor Manuel Garcia presented a paper to the Royal Society of London, entitled "Physiological Observations on the Human Voice," and demonstrated the method of employing mirrors for studying the larynx. In the year 1857, Professor Turck of Vienna, endeavored to employ laryngeal mirrors in the wards of the General Hospital. In November, 1857, Professor Czermak of Pesth, succeeded in demonstrating the value of indirect laryngoscopy to the medical profession. We all appreciate the limited field in which this method can be employed, and therefore *direct* laryngoscopy offers greater possibilities in the diagnosis and removal of foreign bodies from the lower respiratory tract, and in the treatment of various serious conditions of that locality. By direct laryngoscopy is meant the direct inspection of the interior of the larynx without reflection of the image. In order to do this the base of the tongue and various structures above the larynx must be held out of the way with a tubular speculum or other suitable instrument and the head must be thrown backward, as will be demonstrated.

The history of bronchoscopy must include a history of esophagoscopy, which preceded it. Kussmaul, in 1868, performed the first esophagoscopy, using the Desormeaux urethroscope. In 1861, Mikulicz designed an esophagoscope and succeeded in examining the stomach with an elongated form of the same. In 1896, he reported successful cases of tracheoscopy. Kierstein in 1897 described tracheoscopy and direct laryngoscopy; and V. Schrotter, lower tracheoscopy and bronchoscopy, in 1901. To Professor Killian of Frieberg, we owe our everlasting appreciation for his invaluable services in demonstrating and perfecting

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bronchoscopy; and in this country the work of Coolidge, Einhorn, Ingals and De Roaldes deserves mention, while our greatest debt of gratitude is due to Dr. Chevalier Jackson for his laborious and untiring efforts in presenting to the profession an ideal and complete set of instruments, for the improved technique, and for the concise and masterly presentation of this subject in book form.

TRACHEO-BRONCHOSCOPY.

The introduction of the bronchoscope through the natural passage is called upper tracheo-bronchoscopy; when introduced through a tracheotomy wound, lower tracheo-bronchoscopy.

Instruments.—On the continent, the instruments devised by Professor Killian and V. Schrotter are employed. Professor Killian's double tubes vary in size and can be elongated by simply extending the inner tube. The illumination of these tubes for practical work is projected from an independent source of light, usually the Kierstein lamp, into the proximal end of the tube, or, for demonstration, the Brunning hand-lamp. Jackson's tubes involve an entirely different principle. The light is at the distal end of the tube, and when long tubes are employ-

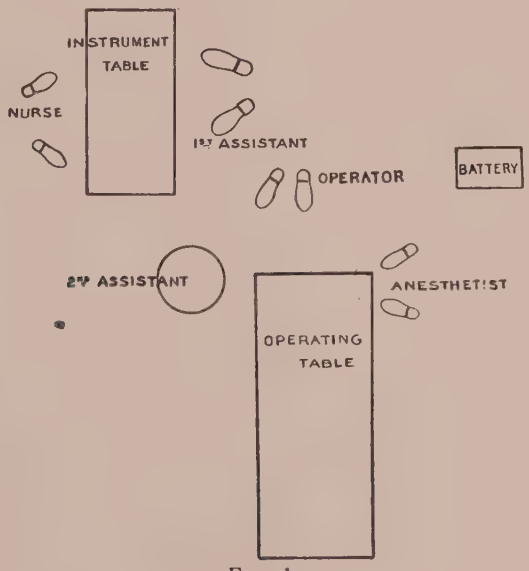


FIG. 1.

ed the full power of the light is thrown on the field—which, in my opinion, is a decided advantage.

Tubes of various lengths and diameters, cotton holders, dull hooks, sharp, dull, curved and expansive forceps, safety-pin closers, secretion aspirator, laryngeal knife and cautery, and a good strong battery or rheostat, are the essential instruments.

Technique of Direct Laryngoscopy and Tracheo-bronchoscopy.—Carefully inspect and test the electric lamp and batteries; sterilize the instruments and arrange them properly on the table.

Asepsis.—It is important that the operator and assistants should observe strict asepsis in their work. Sterile caps and gown should be worn.

Preparation of the Patient.—The oral cavity of the patient should be thoroughly cleansed with diluted alcohol or other suitable antiseptic, and the same process should be applied to the face, and especially to the moustache. If possible, a purgative should be administered the night before, and no food should be allowed for six hours preceding tracheo-bronchoscopy, or eight hours preceding esophagoscopy. (Jackson.)

Anaesthetic.—For ordinary office work for direct laryngoscopy, cocaine is sufficient. Apply locally a 5 per cent. solution of cocaine to the larynx; then cocainize with a 20 per cent. solution.

Position of the Patient.—Sitting posture.

The patient sits on a low stool, the assistant on a high one. The assistant supports the patient and holds his head bent backward, the

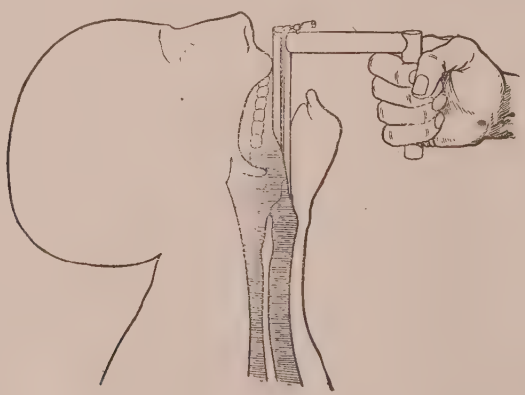


FIG. 2.

trunk and neck forward—especially the latter, the bending being as much as possible in the region of the axis and adjacent cervical vertebrae. At the same time the mouth is held wide open with a gag, while with the forefinger the assistant keeps the patient's upper lip away from the teeth. (Jackson.) The nurse should refill the sponge holders and work the aspirator. The first assistant passes the instruments to the operator. The operator introduces the illuminated tubular speculum in the median line along the centre of the tongue until the epiglottis ap-

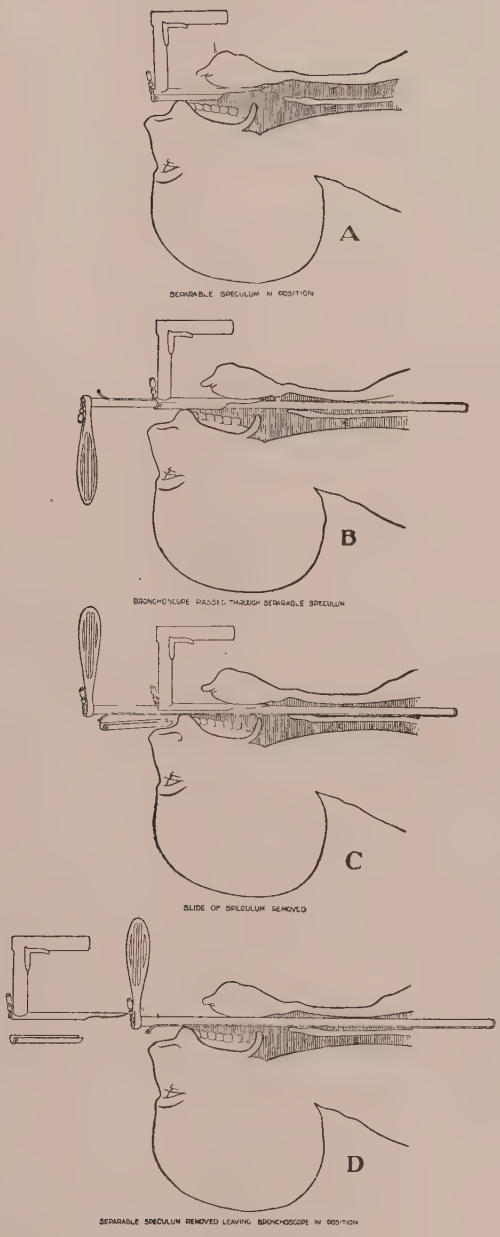
FIG 3.

pears; the distal end of the tube is passed posteriorly to the epiglottis for about 1 cm., then pushed forward, and the epiglottis is lifted, and with it the base of the tongue and tissues attached to the hyoid bone out of line of vision. The larynx is brought into direct view and thoroughly cocainized. The same details are followed in performing upper tracheo-bronchoscopy in the sitting posture, except that the separable tubular speculum is used instead of the plain tubular one. The illuminated bronchoscope is passed through the speculum down into

the trachea, and the speculum is removed. The tracheal and bronchial mucosa are cocainized through the bronchoscope. The tube can be passed into either bronchus by simply moving the tube to the opposite angle of the mouth. The head and neck of the patient are moved slightly in the same position.

Dorsal Position.—The patient is placed upon an operating table, the foot of which is slightly lower than the head. A detailed description of the correct position of holding the patient's head as well as the duties of the second assistant in endoscopy, as described by Dr. John Bryce, are worthy of repetition. The essentials are: In all this work safety

Fig. 4.



SCHEMA ILLUSTRATING UPPER TRACHEO-BRONCHOSCOPY

FIGURE 5.

demands that the mouth, pharynx, and esophagus be brought into a straight line by holding the head steadily in extreme extension with the mouth wide open. Impress upon the second assistant the important responsibility of holding the head steady and the danger of allowing the mouth gag to slip. The patient is drawn forward until the tops of his shoulders clear the table by from 4 to 6 inches, and the mouth gag is inserted in the left side. The assistant is placed on the right side of the patient's head on a stool of appropriate height, as though on a side saddle, his right leg beneath him in the kneeling posture, his left foot supported on a stool 26 inches lower than the top of the table; his right forearm is passed beneath the patient's neck, supporting it; his right hand grasps the mouth-gag, drawing it strongly backward; his left hand rests on his left knee, grasping the head strongly at or in front of the brégma, bending it backward and exerting a certain degree of upward pressure.

Anaesthetic and General Technique.—Preference should be given to the general anaesthetic in the dorsal posture, especially if there is dyspnoea. The absence of reflexes and complete relaxation simplifies the procedure. Chloroform should be administered until the patient is fully under its influence. The separable speculum is inserted in the same manner as the tubular speculum described in direct laryngoscopy, and the larynx cocainized. The bronchoscope is then passed through the speculum, and the operator's eye is held to the bronchoscope, which is then passed by sight down to the glottis.

During the inspiratory abductive excursion, the bronchoscope is inserted into the trachea and the separable speculum removed, the tracheal mucosa is cocainized, and the tube continued downward into the bronchus. The bronchial mucosa is then cocainized (repeating, if necessary). To continue the general anaesthetic, chloroform is dropped upon a gauze sponge, held intermittently in front of the tube.

Lower Tracheo-Bronchoscopy.—After performing a low tracheotomy the patient is placed in a modified Trendelenburg's posture. Bleeding should be controlled, and then a tracheal dilator introduced and the tracheal mucosa cocainized. The patient's head should be turned to the opposite side and the bronchoscope introduced on the left side for the right bronchus to the bifurcation; the right bronchus should be co-

cainized, and then the secondary bronchus in which the foreign body is lodged. The procedure is reversed for the left bronchus.

Jackson advises the following sizes of tubes: For lower tracheo-bronchoscopy, a tube 8 mm. by 20 cm. for adults; 2 mm. by 14 cm. for children. For upper tracheo-bronchoscopy, a tube 7 mm. by 45 cm. for adults; 5 mm. by 20 cm. for children, or 7 mm. by 20 for older children.

The tracheotomy and bronchoscopy should be performed under strict asepsis and the edges of the tracheal wound should be brought together, keeping the soft structures separated; and the wound should be dressed with wet bichloride gauze, which should be changed every three or four hours. The patient should be placed in bed without a pillow, and the foot of the bed should be raised.

Anatomy and Topography of the Trachea-Bronchial Tree.—When a patient is placed in the recumbent posture, the illustrations as viewed by the surgeon are upside-down. As seen in the bronchoscope the trachea is a tube slightly flattened on the posterior wall. This flattening is rythmically increased with each pulsation. The mucosa of the trachea is moist and glistening, whitish in circular ridges corresponding to the cartilaginous rings, the intervening grooves being reddish. At the bottom of the trachea a white shining ridge is seen to divide the trachea anterio-posteriorly into two unequal parts. On the left of the ridge is the slanting orifice of the left main bronchus, and on the right its larger fellow. Passing the tube down the right bronchus a view is presented that differs considerably in different individuals. The view shown in fig. 2 is a drawing of the right bronchus of a man 25 years of age. At the right is seen the orifice of the first branch, the upper lobe bronchus. Further down anteriorly is seen the orifice of the middle lobe bronchus. At the left we look into the depth of the inferior lobe bronchus in which the orifices of ventral and dorsal branches are seen.

In fig. 3 is shown a bronschoscopic view of the left bronchus of this same man. Above and to the left is seen the opening of the superior lobe bronchus, while the entire right of the view shows the inferior lobe bronchus with the opening of the dorsal and ventral branches in more or less perspective. The mucosa of the bronchi is somewhat similar to that of the trachea. The normal movement of the trachea and bronchi may be classified as respiratory, pulsatory and deglutitory. The two former being rythmic, the latter being noticed occasionally. (Jackson.)

Indications and Advantages in Direct Laryngoscopy.—With a tubular speculum and under local anaesthesia foreign bodies can be removed from the larynx more quickly, with less risk, and practically without pain.

The diagnosis of benign and malignant neoplasms of the larynx is greatly facilitated by direct laryngoscopy, the operative procedures for benign growths are greatly simplified and hastened, and their removal accomplished with less danger of injuring the neighboring parts.

In the treatment of tubercular and syphilitic ulcerations, in abscesses and cicatricial stenoses, congenital webs, and for chemical and electrical cauterization of the larynx, direct laryngoscopy offers its greatest advantages.

The greatest achievement of tracheo-bronchoscopy, which places this instrument in the front rank of modern scientific discovery, is the operation for the removal of foreign bodies from the bronchi and their branches. You, gentlemen, fully appreciate the dangerous lesions and complications following the lodgment of foreign bodies in the small bronchi. Medical publications and the lay press are today reporting the successful removal of these inimical bodies from the lungs of patients in cases which formerly were too often doomed to death.

The tracheoscope and bronchoscope have passed the stage of experimental development and now offer to the profession an ideal method for diagnosis and treatment of diseases of the trachea and bronchi; specific and non-specific ulcerations, tracheal and bronchial stenoses, cicatrices and adhesions. Malignant and non-malignant tumors which were formerly shrouded in darkness and despair, are now beautifully illuminated by the rays of this wonderful bronchoscope and directly examined and treated by the operator.

ESOPHAGOSCOPY.

The examination of the esophagus with the esophagoscope passed through the mouth is called direct esophagoscopy. In order to successfully perform esophagoscopy, a few anatomical relationships must be fully appreciated. The length of the esophagus, taken from the teeth according to Storck, are as follows:

	Teeth to Cricoid.	To Bifurcation.	To Cardia.	Length of Esophagus.
Birth	7 cm.	12	18	10
2 yrs	10 cm.	15	23	13
5 yrs	10 cm.	17	26	16
10 yrs.	10 cm.	18	28	18
15 yrs.	14 cm.	23	33	19
Adult	15 cm.	26	40	25

The esophagus proper commences at the upper border of the cricoid cartilage, opposite the intervertebral disk between the fifth and sixth cervical vertebrae, descends along the front of the spine through the posterior mediastinum, passes through the diaphragm, and, entering the abdomen, terminates at the cardiac orifice of the stomach opposite the intervertebral disk between the tenth and eleventh dorsal vertebrae. The esophagus proper is about 23 cm. in length. At its commencement it is placed in the median line, then inclines to the left side as far as the root of the neck, again passes through the middle line and finally deviates to the left as it passes through the diaphragm. As it rests upon the cervical and thoracic portions of the spine, it presents an antero-posterior flexure, corresponding to the spinal curvature. (Gray.)

Owing to the elasticity of the esophageal wall, the diameter of its lumen varies. Its transverse diameter is greater than its antero-posterior diameter. At the cricoid, aortic, and left bronchus construction it is in the ratio of 23 mm. to about 17 mm., while at the diaphragm it is nearly circular and measures about 23 mm. (Jackson.) Owing to the great mobility of the esophageal tube, gastroscopy can be performed.

Technique of Esophagoscopy.—The preparation of instruments and operating table, the duties of assistants and nurses, as well as the posture of the patient, are similar to those for laryngoscopy. Examination of the esophagus should be divided into—first examination of the upper end of the esophagus, and second, the examination of the remaining portion of the esophagus and stomach. An empty gastro-intestinal canal is essential in either method. For the former, the sitting posture and cocaine anaesthesia of the pharynx, upper end of the esophagus and larynx are sufficient. Pass the tubular speculum downward, back

of the tongue and epiglottis, pressing these organs forward. This brings into view the arytenoids and posterior pharyngeal wall and the depression between them. Insert the speculum in this depression down to the cricoid cartilage, which is lifted forward, exposing the introitus esophagi. To examine the remaining portion of the esophagus, general anaesthesia and the reclining posture are essential. Killian prefers the patients on their sides with shoulders and head lowered, so that the saliva runs out of the corner of the mouth. Jackson advises that the patient be placed upon the back with the foot of the table lowered about 15 inches. Lubricate the tube with sterile vaseline and hold the proximal end lightly between the fingers of the right hand, with the handle directed horizontally to the right. Pass the forefinger of the left hand into the right glosso-epiglottic fossa and, if possible into the right pyriform fossa. The tube follows this same route, while the fingers slide to the median line, and lift the tongue and anterior pharyngeal tissue upward. In children, it is better to lift the cricoid

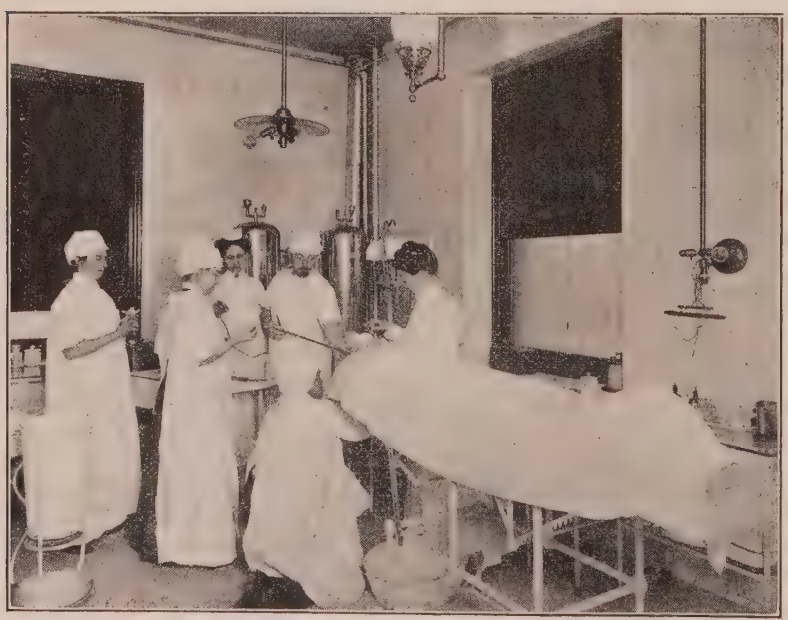


FIG. 6.

cartilage direct; in adults, the cartilage must be lifted indirectly by traction upon the tissues at the extreme point reachable. After passing the introitus, the obturator is removed, the cord is attached to the light carrier and the light regulated to full illumination, and under guidance of the eye the tube is passed down into the stomach, the sense of touch being used only to note resistance, which if felt means something to be overcome by skill, not force. Pinching of the tube by the teeth must be avoided, so that the tube will be free to follow the axis of the esophageal lumen as it is seen to open up ahead.

The indications and advantages in direct esophagoscopy are about the same as those in direct tracheo-bronchoscopy. In skilled hands the gastroscope will prove its great value in directly illuminating the inner walls of the stomach and aid the profession in directly diagnosing, operating upon, and treating the various lesions of this most interesting and important organ.

Note.—The author is indebted to Dr. Chevalier Jackson for the loan of these beautiful illustrations, and for the privilege of quoting verbatim from his book on tracheo-bronchoscopy, etc.

Post Partum Hemorrhage.*

By J. I. Reid, M. D.

Aldrich, Ala.

Hemorrhage after delivery of the child and either before or after delivery of the placenta is a most dangerous complication, sometimes causing death in a very few minutes, especially when unprepared for and not properly managed, hence the necessity of fixed principles and known remedies used without hesitation in the time of need. No person should attempt the practice of obstetrics without being thoroughly familiar with treatment for flooding. If the case is properly managed will not have hemorrhage very often. We have no time for reference to our library or notes, and if the accoucher does not act quickly and use the

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*Read before Shelby County Medical Society.

proper treatment the woman will bleed to death in a very few minutes. Correctly appreciating the cause of flooding permits prevention which is better than cure.

CAUSES.

The causes may be classed under three general heads:

1. Imperfect retraction of the uterine wall.
2. Injuries to the birth canal.
3. Disease of the blood and blood vessels.

In the first variety, which is the cause most often met with, why should the uterus fail to contract? There are several reasons: First, something inside which prevents perfect retraction of the uterine muscle. Retained placenta, but as a rule a retained placenta does not cause much bleeding, but a placenta that is partly detached often causes profuse hemorrhage by holding open the mouth of the blood vessels and thereby causing profuse bleeding. A portion of the membranes may be retained, but as a rule this causes a dribling for sometime after delivery.

Neoplasms.—Hour glass contraction (which is one part contracts and the other does not) is often caused by large doses of ergot. The one condition above all others that leads to flooding is deficient uterine contraction. Its muscular walls may be worn out by a long labor, or partially paralyzed by previous overdistentions due to amniotic dropsy or plural pregnancies, etc. Too rapid delivery, as too much haste in artificial delivery.

Don't try to deliver the child unless nature is making an effort, only assist nature, unless there is hemorrhage or some other grave symptom. Weak uterine muscle may occur from general weakness of the woman, due to constitutional diseases, severe previous illness, exhausting discharge, heat of the climate, etc. Those who have flooded in previous labors are apt to flood again. This is observed in plethoric women subject to profuse menstruation.

Second. Variety of causes. Injury to the birth canal, may be any form of laceration of the cervix, vagina or perineum; the cervix as a rule don't bleed much, but the pelvic floor does.

Third. Diseases of blood and blood vessels are causes which interfere with the formation of the coagula, or which tend to remove or

displace coagula in the mouth of the bleeding vessels. The blood changes in profound albuminuria and wasting diseases, possibly the so-called hemorrhage diathesis may retard formation of coagula. Formed and half formed clots be displaced by strong arterial tension or pulsation, or by the patient suddenly rising, sneezing, coughing, laughing, vomiting, etc.

As a whole the main cause is imperfect uterine retraction. After the womb is firmly contracted and bleeding continues there is probably a laceration. A contracted uterus does not bleed.

SYMPTOMS.

The symptoms of post partum hemorrhage, if it be profuse, are those of collapse, together with the presence of blood (apparent hemorrhage) or without the presence of blood (concealed hemorrhage). The blood may be ejected in immense quantities, saturating the bed clothing and mattress and overflowing on the floor. In these tremendous bleedings death may follow in a minute or two, preceded by all the manifestations of hemorrhage, extreme pallor, cold extremities, an anxious expression, air hunger, dimness of vision, mental confusion, and, finally, a convulsion rapidly terminating in death.

We may have the above symptoms of collapse without any blood escaping externally, but by examination of the uterus through the abdominal wall will find a large boggy mass not well outlined, and by active friction over fundus of uterus by Crede's method, will feel the large boggy mass harden under the hand. There will appear a sudden spurt of blood from the vulvar orifice, as the blood contained in the uterine cavity is expelled. The hemorrhage is quite distinctive as compared with that arising from laceration of cervix or vagina. In the latter case the uterus will be found firmly contracted, an examination of the vagina and cervix will reveal the bleeding point.

PROGNOSIS.

The prognosis of post partum hemorrhage is doubtful, if the condition be detected at once, it is a simple matter to apply appropriate measures to control the bleeding and prevent further hemorrhage. If assistance be not at hand or the medical attendant be a man of slow wit or ig-

norant of the proper course to pursue, a fatal termination will quickly follow.

TREATMENT.

The treatment of post partum hemorrhage includes, first, prophylaxis (which is better than cure), and second, means to control active bleeding. In all cases of delivery we do not know which ones will be followed by hemorrhage, so we should use all methods at our disposal to avert such a disastrous sequence. Too rapid evacuation of the uterine contents must be prevented, and as the fetus descends through the lower birth canal gentle pressure above on the fundus through the abdominal wall by the unengaged hand will maintain the uterine walls in a close apposition to the fetal body and other solid contents. Firm uterine contraction may thus be obtained, and the possibility of relaxation prevented. When the child is delivered I always keep one hand on the uterus until the cord quits pulsating or the babe cries freely, then by the use of artery forceps I clamp the cord in two separate places, anywhere it is convenient to get to, and cut between. I never attempt to tie the cord until after the babe is washed. After delivery of the placenta by Crede's method and firm uterine contraction is obtained, I always administer one drachm fluid extract of ergot. I did not use ergot until after a few cases of alarming hemorrhage. It can do no harm, and by producing firm uterine contraction lessens after pains, and liability of infection. A firm abdominal binder with a uterine pad is applied; these maintain a constant pressure upon the sensitive uterus and thereby excite it to continuous tonic contraction. Excessive moving of the patient from one side of the bed to another, any mental disturbance may be avoided. In instrumental deliveries the greatest care must be observed to avoid undue damage to the soft structures.

The curative treatment or the means to control active bleeding I will discuss in report of the following cases:

Case 1. Mrs. H. Age 24. Primipara; went into labor at 6 a. m. I was called at 9 o'clock. On examination I made a diagnosis of vertex presentation; delivered at 2:30 p. m. of well developed child. Labor was tedious and patient highly nervous. Uterus contracted nicely and expelled placenta with little difficulty. On repeated examination of uter-

us found it to be firmly contracted. Pulse 130. But on examination of vulva found dribbling of blood, and on further examination found lacerated perineum which was bleeding freely. This laceration was immediately repaired, which stopped all hemorrhage. Patient still very nervous, pulse 130. I remained with patient until 8 a. m. following day. She was very restless during the night and pulse 110 when I left, with instructions to call me if any more bleeding occurred. Patient made slow recovery. I would not account for the fast pulse unless it was from her nervousness. She did not lose enough blood to have such effect over the heart.

Case 2. Mrs. H. Age 28 years. Second confinement; went into labor at 2 p. m. I was called at 8 o'clock, and on examination found vertex presentation. At 11 p. m. delivered. Uterus contracted nicely and expelled placenta without difficulty. After dressing babe I examined uterus through abdominal wall and found large boggy mass, and by strong manipulation by Crede's method uterus contracted and expelled a large quantity of blood. I had assistant to administer teaspoonful fluid ext. ergot. I noticed in a few minutes womb relaxing, and by continued manipulation would contract, but soon relax again. I gave hypodermic of ergotin and repeated in 20 minutes. At 2:30 a. m. uterus contracted very well. Pulse 94, patient resting very well. During this time I kept constant watch over uterus and whenever there was any tendency to relax I used Crede's method of manipulating the uterus I had child put to breast, gave teaspoonful ergot, applied abdominal bandage with pad and left with instructions to call me if any more bleeding occurred. At 4 a. m. was called, found patient cold, extremely nervous and calling for air. I immediately examined through abdominal wall, found large boggy mass. I sterilized hands as quickly as possible, inserted one hand in uterine cavity, scraped out clots and blood, and with one hand in uterus and grasping and kneeding uterus through abdominal wall with the other succeeded in getting contractions sufficient to expel hand. Gave hypodermic ergotin and remained with patient several hours. No more hemorrhage occurred. Patient made good recovery.

Case 3. Mrs. R. Age 35 years. Fifth confinement. Called at 9 p. m., delivered at 10, very easy labor; delivered placenta by Crede's

method, patient apparently in good condition, large strong woman. After dressing cord I examined uterus, found large boggy mass. Patient began to complain of being tired and blind, diagnosis concealed hemorrhage. By strong manipulation uterus contracted and expelled a large quantity of blood; blood run off side of bed on the floor. I grasped uterus between two hands and made firm pressure, while assistant gave teaspoonful ergot. I held uterus for half an hour; no more tendency to relax! repeated the dose of ergot. Patient had no more hemorrhage, made good recovery.

In the first variety, of causes, first make the uterus contract by the use of ergot, and external and internal manipulation, at same time empty it of contents if anything remain. Grasp uterus through abdominal wall with one hand, and press cervix against pubes with other, while assistant prepares fountain syringe of hot sterile water, then by irrigating uterus with hot water favor formation of clot.

In the second variety of causes the indications are, first, repair the lacerated tissue. If this cannot be done pack with iodoform gauze. If this fail may use styptics.

The use of styptics is recommended after all others fail, vinegar, chloraform, iron, salts, etc. In neoplasms that project in the uterus and prevent perfect retraction of uterine muscle, and thereby cause hemorrhage, we are justifiable in tamponing uterus. In no case should the cervix or vagina be packed as it would convert an apparent into a concealed hemorrhage, and the patient bleed to death before we knew it. After hemorrhage is controlled we then treat shock by use of stimulants, strychnine, atropine, whiskey, etc. One of the best means is to give about one quart of normal solution in each breast. This will often revive patient when stimulants fail.

As I would take up too much of your time, will not discuss treatment for third variety of causes.

Pneumococcus Empyema—Resume of Twenty Operated Cases with Remarks.

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Of the twenty personally observed and operated cases forming the basis of this report, six were encountered in private practice and fourteen in hospital practice. It was our privilege to observe some of these cases from or soon after the inception of the causal disease, pneumonia, in private practice, and in another case in the hospital, we have the complete medical record; this observation enables us to determine with more or less accuracy the period of empyemic invasion. In most of the cases, the pneumonia was of the lobar variety, and a striking fact is that the empyema occurred on the side affected with pneumonia, showing in all probability a direct infection by contiguity. Through inadvertence, the pus in many of the cases was unfortunately not examined, but the uniformity of result of bacteriologic examination in those specimens submitted, together with the accurate clinical history of pneumonia in the others, makes it highly probable that all were pure pneumococcus infections. The disease occurred with equal frequency on the right and left sides. Two of the cases were bilateral, or ten per cent of the series. Of these, one died a child of two years old, whise history forms part of this record.

The cases might easily be divided into two groups (a) those recognized and operated on early, (b) those recognized and operated on late. The former comprises seven cases, the latter thirteen. Group (a) is marked by less shock at the time of operation, a more rapid convalescence, a shorter period for drainage, a comparative short hospital residence and a more rapid restoration to health. Case 4 forms an

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exception to this rule, drainage being continued for 73 days. Of group (a), the shortest duration of drainage was ten days, the longest twenty-one days, if we except case 4. Hospital residence ran from seven days to twenty-one days. In the later cases, both hospital residence and drainage were longer; the patients also bore a decidedly septic and exhausted appearance, and were a longer time in getting well. The ideal post operative residence of these cases is the country hospital or sanitarium, where fresh air would add materially to the skilled nursing.

Age.—All of our cases were in children under 10 years of age.

Between one and two years, there were six cases.

Between two and five years, there were eight cases.

Between five and ten years, there were six cases.

Not one of our cases was under eighteen months old.

In striking contrast to this is the interesting autopsy table of Bovaird[1] wherein he shows that of 69 fatal cases of empyema occurring in children under two years of age, eleven occurred in children under six months, forty in children between six months and one year and eighteen in children between one and two years. The youngest patient was two months and nineteen days old.

Koplik's[2] table of 120 personally observed cases, shows sixteen in children less than twelve months old and thirty-nine between one and two years.

The statistics of Jopson[3], in an analysis of forty-one cases, are more in accord with ours; two were under 1 year; eight between 1 and 2 years, one under 1 year, one half were under four years and nearly two-thirds under six.

The time elapsing from the period of pneumonic invasion until pus was detected varied from fourteen days to over two months. The amount of pus evacuated ran from two ounces to six ounces to ten ounces, and up to nearly one quart in the long standing cases.

Intercostal incision was practiced in one case, an emergency which could not stand a general anesthetic; in the remaining 19 one and one-half to two inches of rib was resected.

Two of our patients were colored children.

In one case there was pointing in the third intercostal space anter-

iorly before operation, and several cases had previously been subjected to intercostal incision.

Mortality.—Two of the little patients died, one of 18 months and one of two years, the latter a double empyema, a mortality of 10 per cent.

The history of death No. 1 fellows:

Clara Sewell, 18 months old, colored, was admitted into the Charity Hospital Jan. 1, 1908, and died Jan. 8, 1908. Family history negative.

Previous History.—Child healthy. Present illness began two and one-half months ago, with what appeared to be pneumonia. For the past two weeks has been wasting rapidly and has had shortness of breath. Fever, profuse sweats, persistent cough, loss of appetite.

Appearance.—Very much emaciated, very aneamic, marked dyspnoea, very ill.

Physical Signs.—Left chest dull; absence of motion on affected side —other organs apparently normal. Aspiration shows pus in left chest.

Operation.—Short chloroform anaesthesia, resection of 1 1-2 inches left eighth rib in posterior axillary line. Small quantity of pus evacuated, about two ounces, rubber drainage tube, wound dressed daily. Condition grows worse. Not much pus drains away. Death comparatively sudden. Jan. 8, 1908 at 10:40 p. m.

Autopsy.—Right lung free in pleural cavity, pink color—crepitates slightly on pressure. Section pink color on base and middle lobe; lower part of upper lobe shows area of consolidation, deep red color and dry. Left lung totally adherent and does not crepitate; bluish color and dry. On pressure a purulent fluid exudes, slight amount of fluid in pleural cavity. Heart and other organs normal.

Diagnosis.—Pneumonia. The report by our interne that the child had died comparatively suddenly, led to the belief that death might have been caused by an embolus, but the autopsy findings show a sufficient cause in the lung consolidation, together with the profoundly septic condition.

Final Results.—We have recently taken occasion to see some of our cases of one, three and five years standing. All are perfectly healthy, no untoward conditions or complications have arisen, the

rib section has had no effect in producing a deviation of the spine, both sides of the chest are symmetrical and the lung sounds are perfectly normal. One case shows an apparent slight dropping of the scapula on the affected side, due no doubt to the incision, which lay immediately beneath the inferior angle of this bone.

Diagnosis.—In all but two or three of our cases, the diagnosis was comparatively clear, all the classical symptoms of a pleural effusion flatness on percussion, diminished or absent breathing, and voice sounds, absent vocal fremitus and limited movement on the affected side being present. In very young children and infants the auscultatory signs were hard to elicit. In two cases of left sided accumulation the heart was distinctly displaced to the right of the sternum. In two cases marked physical signs were lacking. In several there was a distinct pneumonia crisis, followed by a sudden rise in temperature, indicative of some complication, in others an apparent attempt at defervescence. The accompanying temperature chart of one of our hospital cases illustrates the pneumonia crisis, followed in a few days by empyema. The time elapsed between the septic invasion and operation was consumed in consultation with the pathologist and not the surgeon. Exploratory puncture offers the only positive means of determining the presence of pus, and was practiced in all of our cases. A long sharp pointed needle should be used, and exploratory aspiration repeated if pus is not found at once; in one of our cases exploratory puncture was practiced for five times at one sitting before pus was found. This was in the other side of the chest of a patient operated on two days previously for a left sided empyema. While we do not suggest such repeated aspirations at one time as a routine, this particular case, which forms part of the record of double empyema, required it. It sometimes occurs, as it did in several of our cases, that the thickened costal pleura is pushed forward by the needle, when the examination appears negative until the needle is thrust further. This fact must be borne in mind, and a sharp pointed needle used.

The leucocyte count is unfortunately of not much value, as it is high in both broncho-pneumonia and lobar pneumonia. A diminished leucocyte count during a pneumonia associated with a subsidence of temperature, followed by a high count and a temperature recrudescence

should be strong presumptive evidence of pus. In concluding our symptomatology, it might not be amiss to throw out the broad suggestion, that empyema as a complication of pneumonia should always be borne in mind, and any case running an abnormal course, even in the absence of a group of classical symptoms, should be given the benefit of aseptic exploratory puncture. We have never seen any harm as a result, and believe it might often clear up an obscure condition.

The prognosis of pneumococcus empyema we believe usually to be good, particularly in the cases recognized early before mixed infection has occurred, pressure damage has been done, a profound septic condition has ensued, or nature has attempted to get rid of the offending mass by rupture in a bronchus or elsewhere.

The prognosis is very much influenced by the age of the child; infants stand septic conditions and operation much more poorly than older children.

Treatment.—The treatment of pus in the chest permits of no argument; like a diseased appendix it must be removed. The method of removal is an interesting study in progressive medicine and surgery. A close study of the extensive literature on empyema, shows a rather rapid evolution.

Aspiration, formerly practiced, has given way to free evacuation, by intercostal incision and rib resection, and of the latter methods, we think we are justified in saying that intercostal incision is rapidly giving way to rib resection. Aspiration and intercostal incision should be reserved for emergency cases and those contraindicating the use of a general anesthetic.

Intercostal incisions have a decided disadvantage over rib resection. The intercostal spaces in children are very narrow and afford an insufficient space for drainage. The approximation of the ribs during respiration frequently occludes the tube and prevents drainage. The reinsertion of the tube is very painful. In our only case of intercostal incision, made necessary by an urgent demand for operation and a contraindication to the use of a general anesthetic, we were enabled to observe these disadvantages very closely and we believe convalescence was retarded. Blaker's statistics[4] show that of 26 cases in which simple incision was practiced, 12 recovered and 14 died. Much further evi-

dence might be adduced in support of our contention. When intercostal incision must be practiced, we would advise the use of hard rubber tubes for drainage.

Rib resection in our experience and opinion, has absolutely nothing against it. It does not add materially to the shock and can be done quite rapidly. The amount of rib removed does not matter; it should be 1 1-2 to 2 inches. Even with rib resection we have found the great tendency for the wound to close. A sufficient opening should be made to allow of free exploration with the finger. While theoretically and mechanically the external opening should be of diameter not larger than the bronchus to the lung of the affected side; to equalize the air pressure, this has no place in fact—the opening should be a large and free one. In 19 cases in which rib resection was practiced we have not had one case of necrosis. Nor can we see any objection to the insertion of a suture at the ends of the incision, which objection has been urged, if the incision in the soft tissues has been made larger than necessary.

Technic.—With the rapid up and down excursions of the chest in an affected lung under an anesthetic, it is sometimes difficult to gauge the incision accurately over the rib. With the selected rib fixed between the thumb and index finger of the left hand, all of the soft tissues through the periosteum down to the bone, are severed at one cut by the means of a periosteal elevator, and we have found a small Parker's retractor admirable for this purpose, the entire circumference of the rib is denuded, the retractor guards the intercostal vessels and nerves, and at the same time acts as a guide for the introduction of the bone forceps. A pair of baby bone forceps now divides the rib at its sternal end and by means of our retractor periosteotome the rib can be further denuded to any desired length. The rib is now divided at its vertebral end, and all bleeding of the soft tissues controlled. The patient is now permitted to recover from the anesthetic and the pleura incised. The recovery of the patient from the anesthetic facilities the evacuation of pus and fibrin through the act of coughing which always occurs. In most cases, any further exploration of the pleural cavity is unnecessary and should not be practiced as a routine measure; it can be of assistance only in those older cases where tolerably firm adhesions

are suspected and should be broken down. While it has been our practice to remove all fibrin which presents at the opening, we feel it is meddlesome surgery to attempt the radical removal of these at the time of operation, it adds to the shock and with a sufficiently large opening these will take care of themselves in the subsequent drainage. Hemorrhage, an important factor in the surgery of children, proves inconsiderable. The above technic enables us to complete the major part of the operation in something less than five minutes, another important factor, rapidity. The pus is allowed to escape slowly and intermittently. A rubber drainage tube is inserted and the outer end of this is split and fastened to a thick gauze pad, and thus excoriation of the skin by the pus is prevented. The various apparatus for drainage and siphonage are hardly necessary for acute pneumococcic empyemata. Whereas in our earlier cases, irrigation was practiced, probably through custom, none of the later cases were irrigated. We think the habit a bad one and capable only of doing harm; its only possible excuse is in putrid discharges, which are rarely if ever found in simple pneumococcus infections.

The incision should be made in the posterior axillary line, or even the scapular line, to facilitate drainage by gravitation. We have chosen the latter in our more recent cases, thinking that drainage might be favored by gravitation, during the first few days, while the patient is confined to bed, the most important time for drainage. While lung expansion is the more prominent factor in drainage, gravitation aids materially. We have usually chosen the eighth or ninth rib for resection in general or large accumulations—in limited abscesses, the rib is chosen at the site of the collection of pus. The outer dressings are changed frequently during the first day or two, subsequently the dressings and tubes are changed daily. As the discharge becomes less, the tubes are of smaller calibre and shorter. No definite time can be fixed for the discontinuance of drainage; we must be guided by the individual case. While the tube can usually be removed at the end of about three weeks, and sometimes sooner, the disappearance of pus and a slight serosanguinolent discharge call for its removal; it now acts as an irritant, and defeats its very object. Gauze drainage is to be deprecated; when saturated it acts as a plug rather than as a drain. Patients should be up and about as soon as the acute symptoms have subsided.

which is usually during the first week; exercises and amusements tending toward lung expansion, instituted and encouraged.

We have used ether as the anesthetic in most of our cases, on the general principle of greater safety, and can see no objection to its use where no active pneumonic process is present. Nature's effort at removal by rupture through a bronchus is no bar to operation; if anything, operation becomes more imperative.

Double Empyema.—Bovaird's statistics on autopsy findings throw much light on this subject, and demonstrate that double empyema is frequently unrecognized.

The pathological department of the N. Y. Foundling Hospital, 1889 to 1899, shows that of 69 cases of empyema under two years of age, 52 were unilateral and 17 bilateral[5]. In another series of 101 cases[6], 77 were unilateral and 24 bilateral. Both series show an approximate ratio of 25 per cent. There were two cases of double empyema in our series, with one death, that of a child two years of age, profoundly septic and exhausted at the time of admission into the hospital; she died 12 days after rib resection on the left side. The histories of these cases follow:

Case 1. H. C., male, 8 years of age, of good family history, was taken sick January, 1905. Pneumonic consolidation of left upper lobe; there was an attempt at crisis about the tenth day, followed by a marked rise of fever and evidences of consolidation in the right lung. A typical crisis occurred three days after and the temperature remained normal for two days. It now again shot up and exploratory puncture elicited the presence of pus in the left chest. Operation was done a little over two weeks after the onset of his first pneumonia; the temperature declined for two days, when there was another recrudescence in spite of free drainage on the left side. The right chest was now explored, and with the fifth puncture, a two drachm syringe full of pus withdrawn. While operation was contemplated the next day this was made unnecessary as the temperature declined, and the case went on to recovery; the abscess had evidently been a small and limited accumulation. In spite of the severe ordeal, this patient was able to sit up at the end of a week, returned home at the end of the second week and the drainage tube removed twenty-one days after operation.

Case 2. Alice K., 2 years old, of good family and previous history, was admitted to the hospital Dec. 30, 1906. She was a breast fed baby, and in good health until the middle of October, 1906, when she developed a broncho-pneumonia. Fever never left entirely, and she grew gradually weaker and paler. Incisions in the left chest were made on two occasions at her home, but the openings closed.

Appearance on Admission to Hospital.—Very pale-enaemic; heart normal. Pulse small, low tension, regular, rapid. Flatness on percussion and nearly absent transmitted sounds more marked on left side. A few scattered moist rales over both lungs, but auscultation otherwise unsatisfactory; slight bulging and cicatrix in left chest.

Operation, Dec. 31 under chloroform—1 1-4 in. left ninth rib resected. Drainage subsequently free, but lung did not expand. Temperature declined for two days and then again ran a course of 102 and 103. Subsequent aspiration showed some pus on the right side. Temperature continued, patient grew weaker, and died, profoundly septic Jan 12, 1907. No post mortem.

"Double empyema studied in 114 recorded cases by Helin shows a mortality of 30.1 per cent—90 per cent of the cases were in children under 15 years of age. In his own patient the second empyema was evacuated five days after the first."

While simultaneous bilateral thoracotomy is perfectly feasible in view of existing adhesions, it is preferable to wait several days if possible or until the lung on the side first operated on has expanded, before the second thoracotomy is done. In older cases, that is those of long standing, where there are firm adhesions, there can be no valid objection to a simultaneous bilateral thoracotomy.

In view of the fact that in those cases in which we were privileged to observe the primary pneumonia, or secure an accurate history of the lung involved, there was a uniform involvement of the same side in the suppurative process, it is reasonable to suppose that in the bilateral disease, broncho-pneumonia, both sides are not infrequently involved in the secondary suppurative process. This should be borne in mind. While our experience with the very young has been limited, it strikes us that in those cases particularly when pneumonia and empyema are

coexistent, it might be better, at any rate tentatively, to resort to aspiration.

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Jaundice and Its Significance.*

By Seale Harris, M. D.,

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Definition.—By jaundice, icterus, is meant the presence of bile pigment in the blood, with the consequent yellowish discoloration of the skin, mucous membranes, and other tissues, and the secretions of the body. It may be an acute condition, developing rapidly, or it may be a very slow process. Jaundice is not a disease, per se, but is a symptom or complication of many diseases and pathological conditions. It is of great importance, however, and I am glad to have been assigned this subject for discussion.

Classification.—Formerly jaundice was classified as hepatogenous and hematogenous. Under the former were grouped all the conditions of the liver and gall bladder, which could cause obstruction to the flow of bile into the intestines; and under the latter, those conditions in which

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*Read before the Medical Association of Alabama, at Montgomery, April 20, 1908.

there was destruction of the red blood cells with yellowish discoloration of the skin, etc. It is interesting to note that it has not been very many years since the view was held that in the so-called hematogenous jaundice, the liver failed to take the bile from the blood. This view was abandoned, to be replaced by the idea that the icterus was due to hemolysis with the formation of the bile pigment in the blood itself, with the subsequent deposit of the pigment directly into the tissues. Now we know that in those diseases in which there is destruction of the red blood cells, the liberated hemoglobin increases the amount of bile pigment, the bile becomes more viscid and the inspissated bile plugs up the gall ducts, causing bile to be dammed back into the lymphatics and into the blood; so that, in reality, the so-called "hematogenous" jaundice is partially of the obstructive type. Some authorities class those cases of jaundice in which there is hemolysis, as toxemic; but this term gives but little idea of the real nature of the condition.

The classification of Neusser seems to me to be the most rational, since it gives the best idea of the origin of the different types of jaundice. He defines three types: (1) *obstructive,* (2) *hemo-hepatogenous,* (3) *hepatogenous* or *"diffusion" jaundice.*

1. *Obstructive Jaundice* is due to an obstruction of the bile passages either from within or without, causing the blood pressure in the portal vessels to become less than that in the bile ducts, the blood then becomes charged with bile. This is the view which is accepted by many authorities, but the theory of Eppinger seems to me to be more plausible. He maintains that the distended bile capillaries give way and permit the escape of bile into the lymphatic vessels whence it is carried into the thoracic duct and thence into the general circulation.

The bile passage becomes obstructed from (a) within, by gall stones, catarrhal or suppurative inflamation of the bile ducts or common duct, and by cicatricial structure resulting from such inflammation; thick or inspissated bile, parasites (principally the ascarides), tumors within the ducts and liver, gummata, hydatid cysts and abcess of liver; from (b) without, by compression of a large number of bile ducts as in cirrhosis of the liver, by pressure upon the gall bladder or common duct from tumors of the gall bladder, duodenum, colon, pancreas, right kidney, and plyoric end of the stomach; syphilis of the liver with con-

tracting bands of adhesions. Fecal concretions have also been said to cause obstruction of the common duct, and spasm of the gall duct is given as a possible cause of obstructive jaundice. The severe form of icterus neontatorum, in many cases is due to congenital stenoses, or occlusion, of the bile passages.

(2) *Hemo-hepatogenous* jaundice has its origin in changes both in the blood and liver. It is dependent upon hemolysis from any cause, which on account of the free hemoglobin of the blood increases the amount of bile pigment, with the resultant thickening and stasis of bile, the ducts or common duct becoming plugged with inspissated bile, the bile is dammed back into the lymph vessels and thence into the general circulation. The principal causes of this hemo-hepatogenous jaundice are the infectious diseases that produce hemolysis, as yellow fever, malaria, and sepsis, and probably Weil's disease, and poisons which destroy red blood cells, as snake venom and the chlorates It may also be due to the absorption of pigment from extravasated blood and from extensive burns. The jaundice of pernicious anemia is of the hemo-hepatogenous type. The so-called physiological jaundice of the new born also belongs to this class.

(3) *Hepatogenous,* or *"diffusion"* jaundice, refers to those conditions of the liver in which the diseased liver cells are unable to direct all the bile into the bile capillaries. The normal liver cell has the function of directing glycogen, sugar, and urea into the blood vessels and the bile into the bile capillaries. Under certain conditions, the liver cell loses its controlling power and all of the bile does not enter the bile capillaries, but a part of it goes directly into the blood, causing a "diffuse" jaundice. Acute yellow atrophy of the liver, hypertrophic cirrhosis, syphilitic cirrhosis, and phosphorus and mushroom poisoning, cause jaundice of this type.

Symptoms.—The symptoms of jaundice depend upon the presence of bile in the blood and the absence of bile in the intestinal tract. The most characteristic symptom is the yellowish color of the skin which varies in intensity from a light lemon yellow to a brownish yellow or saffron tint, and sometimes, in the most severe cases, to a dark brown or greenish yellow color. Large ecchymoses and purpuric spots occur in

some cases and rarely there is bleeding from the mucous membranes. In long standing and severe cases, the blood coagulates very slowly, and severe or fatal hemorrhage may follow injury or operation. Pruritis is often a distressing symptom, even when no skin lesion is present; but urticaria, furunculosis, and other skin diseases may ensue. The mucous membranes first show the discoloration, and jaundice may be demonstrated in the conjunctiva and mucous membranes under the tongue and of the anterior portion of the floor of the mouth, before the yellowish color of the skin appears. The secretions become colored with bile pigment, particularly that from the sweat glands, and if there is pneumonia, the sputum is yellow. Ascitic, pleuritic, and other serous effusions show the yellow color. The urine is dark, sometimes resembling dark beer, and the presence of bile pigment can be demonstrated by the various tests for bile in the urine. When the obstruction is complete, there is no bile in the intestinal tract, and the stools may be almost white or clay colored. In hepatogenous jaundice, the feces may be normal in color or even more highly colored than usual, because the amount of bile in the intestines is normal or increased. Constipation is usual, though diarrhoea may result from absence of bile, with increased bacterial action in the intestines. Mental depression is a prominent symptoms, and in the severe cases, delirium, convulsions, or coma may occur before death from cholenia. The tongue is usually coated, and, in the severe form, is dry, cracked, and brown. The pulse is low, sometimes ranging from 40 to 20. The temperature is usually subnormal, but in the severe cases, there may be high fever. The respirations are usually slow.

The Significance of Jaundice.—This depends upon the causes which have been mentioned above, though it may be well to go a little into detail regarding the various conditions in which jaundice is a prominent symptom.

Catarrhal Jaundice or *Icterus Simplex,* as it is sometimes called, is usually an extension of an acute gastro-duodenitis into the common duct, which becomes more or less occluded from the swelling of its mucous membrane. It is usually preceded by symptoms of acute catarrhal gastritis, i. e., anorexia, nausea, vomiting, constipation and slight fever.

There is sometimes pain over the gall bladder. The jaundice usually persists for several weeks, though it is nearly always a mild affection. Catarrhal jaundice is sometimes epidemic.

Jaundice from *gall stones* is present only when the stones become impacted in the common or crystic duct, and is said to occur in about one-third of the cases. The paroxysms of gall stone colic are frequently followed, sometimes in a few hours, by a transient jaundice which may be noted only in the mucous membranes. Of course, when the stone becomes permanently impacted in the common duct, usually near the opening into the duodenum, in what is called the diverticulum of Water, the jaundice will persist until the stone slips back into the gall bladder, passes into the intestine, or is removed by operation. The operation for gall stones, with jaundice as a symptom, should not be delayed too long, for the reason that severe jaundice predisposes to hemorrhage and shock, and, in the severe cases, even if the cause of the jaundice has been removed, there may be a sufficient degree of cholemia to cause death.

The jaundice in *Weil's Disease,* or *infective jaundice,* or *billious typhoid* as it is sometimes called, occurs after two or three days of the premonitory symptoms of an infectious disease, i. e., malaise, headache, perhaps delirium, high fever, muscular pains, and gastro-intestinal disturbance. It is usually due to eating infected meats or drinking water which has been infected by animals dying with a similar disease.

Jaundice, with enlarged and tender liver and irregular fever, frequently indicates *abcess of the liver,* but if the tenderness is over the gall bladder, a *cholangitis* may be suspected. Jaundice, with an enlarged liver, particularly of one lobe, without tenderness and without fever, is seen in *gumma* of the liver It should be remembered that jaundice may be due to compression of the common duct or by a *gumma of the pancreas* or by *syphilitic retroperitoneal glands.* In jaundice of obscure origin, particularly if there is a history of *syphilis,* the iodides may determine the cause of the obstruction. Jaundice, with enlarged, smooth liver, if slight, may be due to hyperemia of the liver from *cardiac weakness;* but, if the jaundice is profound, *Hanot's* or *hypertrophic cirrhosis,* or *biliary cirrhosis* may be suspected. Jaundice, with enlarged liver and symptoms of cholemia developing in a few weeks, is significant of *acute yellow atrophy of the liver.* The jaundice associated

with *malignant disease,* is usually accompanied by rapid emaciation, pain and tumor in the region of the gall bladder. The jaundice developing in a few hours, with symptoms of toxemia, may be from *snake bite, phosphorus,* or *mushroom poisoning,* but usually there is a history to that effect. Jaundice may also occur from *acetanilid poisoning.* Jaundice is rare in *atrophic cirrhosis,* though it may be present. Jaundice rarely occurs in malaria, except in *hemoglobinuria* and in *biliary cirrhosis* due to malaria, when it is profound.

Treatment.—Since the symptoms of jaundice are due to the presence of bile in the blood, and to the absence, or deficiency, of bile in the intestinal tract; the treatment should be directed towards decreasing or diluting the toxins in the blood, and in giving a diet and employing remedies to keep down intestinal putrefaction, which ordinarily results from the absence of bile in the intestines. Large quantities of water, preferably the alkaline mineral waters, should be given, with the idea of diluting the blood, increasing elimination by the kidney and skin, and of rendering the intestinal contents alkaline. The diet is of great importance, and should be directed to prevent intestinal fermentation. Since the bile is necessary for the emulsification of fats, foods containing fats, except milk, should be avoided. The carbohydrates should be restricted, and that which is given should be of a form which is easily digested, as rice, oatmeal, barley and arrow root gruel. Fish and other easily digested white meats may be given. Alcohol and the condiments should be interdicted. Milk usually agrees, particularly if diluted with lime water or the alkaline mineral waters. Daily irrigations of cold water (60° F.) often are beneficial, by producing violent peristalsis, thus favoring the expression of mucous from the gall duct. Massage of the gall bladder has been used for the same purpose. Of drugs, the administration of small doses of calomel every two or three days, tends to keep down bacterial action in the intestine and seems to aid in emptying the gall duct. Of the other intestinal antiseptics, salol is perhaps best. It should be given in 5 grain doses every three or four hours. Phosphate of soda is also useful, particularly if there is constipation.

Why Should Exact Hygiene be a Negligible Factor in the Sick Room?*

By J. D. Heacock, M.D.,

Birmingham, Ala.

The insiginficance with which this spbject is treated by the average practitioner of medicine is my only apology for putting the title in so querulous a form. Indeed an appeal in behalf of a neglected branch of medicine so unquestionably meritorious and essential needs no apology, however illy couched in phraseology. It may be considered the A B C's of medicine, but without the A B C's we couldn't spell baker or comprehensibility.

It is not to be insinuated that the average doctor has not correct and precise knowledge as to the application of the principles of hygiene, but it is a reflection upon doctors, I think, when they disregard the details which embody the first principles of rational and progressive medicine.

If preventive medicine is the medicine of the future, what phase of the art could be more important than the hygienic aspect of it? And if hygiene means prevention of disease and preservation of health, why should not exactness be essential in its application?

True hygiene is a science and its practice a beautiful art. The laboratory has made is foundation sure and lasting.

Bacterial findings have established the causation and nature of infectious diseases and hygiene has evolved measures of prevention and investigation, so it is in fact an absolute science.

It means something more than sanitation and disinfection. It is that part of medicine in which things are adjusted to nature and made to conform to physiological demands—adaptation of diet and other factors to the prevntion and cure of perversions of nuarition. It embraces the knowledge and application of the chemistry of the animal alkaloids and kindred compounds. It has to do with all the properties of all the elements that go to preserve life and promote health. As a late writer has said, "Hygiene aims to make growth more perfect, life more vigorous, decay less rapid, death more remote."

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*Read before the Medical Association of Alabama, April, 1908.

It is not within the province of this paper to discuss State medicine or public hygiene. The commercial aspect of the subject is well in the forefront and is keeping even pace with curative medicine. It is a wholesome and encouraging sign when the government establishes a department to propagate the development of scientific hygiene. Even though it be incited from a standpoint of political economy it is none the less corroborative of the needs of household or hospital hygiene. The pity is that exact hygiene in the sick room does not engage the same degree of attention as does the commercial aspect of it. Possibly on account of not being available to public scrutiny and the lax and desultory way in which it is taught in most medical schools is the reason why this feature of practice commands so little emphasis.

The purpose of this paper is not so much to instruct in the principles of hygiene as to emphasize the importance of exact methods in the furtherance of preventive medicine.

Of course, as you will observe, the phraseology of the subject restricts its application to the doctor and his patient.

As a basis of the discussion we might mention four factors that influence the human body, sick or well, viz: light, heat, air and food.

The intrinsic condition, of course, in all cases is the prime factor, because peculiarities of constitution call for a modification of external influences just as therapeutic measures are governed by temperament and idiosyncrasies.

The well made body of rich possibilities may, under evil conditions, be degraded and made susceptible to invasions of disease while under favorable surroundings. Influences will develop it into the highest perfection and a higher degree of immunity may be secured.

Light.—The important influence of sunlight in the development and maintainance of a healthful condition in all higher organisms, both animal and vegetable, is almost too familiar to mention, yet the question arises, Do we all appreciate it fully?

There is yet a lack of information as to the exact physiologic process by which this great agent exerts its force, yet we have abundant evidence that the human body quickly shows the effect or absence of its presence. There is no doubt but that sunlight has other rays of force than those which manifest themselves alone to our sense of sight.

It is conceded by some hygienists that there is close relation between the atinic rays of the sun and that peculiar manifestation of force discovered by Roentgen, and it is further asserted that that power of the sun we see and feel is in nature on the border land between light and electricity that is as yet so vague and unknown. The destructive effect of sunlight upon the germs of disease and their toxic products is common knowledge, and who knows but that if the sun's rays, if more concentrated, would not overcome hostile germs in the deeper tissues? It has been proved that the germicidal effect of sunlight is directly proportional to its actinic power, then why not give our patients the benefit of full doses rather than let them, as we often do, take homeopathic portions rather than a curative amount? In medical practice we would not give a patient with malaria just enough quinine to embitter him, or just enough calomel to tickle his salivary glands, but we would give it to therapeutic effect.

Bie, in the British Medical Journal of not recent date, describes a treatment by means of light, and has reported cures in cases of lupus and baldness. He says the chemic rays penetrate the skin and kill bacteria. If ordinary unconcentrated sunlight is slow in conquering the intractable skin and other pathogenic diseases, we are fortunate in being able to avail ourselves of the invention and discoveries of the blue, violet and ultra violet rays, which are only sunlight intensified and made possible by investigation in the field of hygiene.

Heat.—We all realize that warmth contributes to the material welfare of the human body. Physical warmth as well as chemical heat are essentials. We cannot gainsay the duty of the doctor to see that his patient is instructed as to the importance of an equable temperature. It must be appreciated that a higher temperature is needed in a dryer climate on account of more rapid evaporation taking place. It is important that the constant temperature be kept at 65 to 75 degrees F, whereas in a humid climate 60 to 65 degrees F would do. Without going into details it might be said that that system which admits of the best ventilation is the kind that should be adopted. In this we are confronted by the fact that good ventilation and efficient heating and cheapness do not go together.

Air.—We know that the air that we or any of our patients get is only relatively pure, therefore it behooves us in order to be accurate and to know that our patient is getting only the limit of permissable impurity to have some fixed rule for calculating the quality of air desirable and consistent with the requirements of good ventilation and the maintainance of health.

This may be arrived at by keeping in mind that C O_2 is an index of organic impurities in a room, and this can easily be estimated when we are informed that the constant self-contamination is usually .06 cubic feet per hour per head. .02 per cent is regarded as permissable impurity and when this is exceeded the air is more or less contaminated and should be replenished. By determining these two factors the amount of air per hour for each person has been ascertained and found to be 3,000 cubic feet. It has also been determined that it takes 1,000 cubic feet of space to furnish this much air. Well people at rest can do on less, but the sick need quite this amount. There must be 85 to 100 square feet of floor space per head and an inlet opening of 24 spuare inches. 1800 cubic feet of air extra should be furnished for each cubic foot of gas burned and ten times as much for each pound of oil consumed. Outlets should be located near the top of a room, owing to the tendency of used air to rise, and because in unventilated rooms the foulest air for some time after its contamination will be found near the ceiling.

The properties of the incoming air should be considered. Those impurities in the air that are liable to have a deleterious influence upon health, such as suspended matters acting as irritants, gaseous substances, such as sewer gas, carbon monoxide, products of decomposition, etc., should be dealt with as serious aggravants.

Pathogenic bacteria don't go free in the air, as was proved by Cornet, but cling to duch particles as their mode of transmission.

Food.—Strictly speaking food not only includes those things necessary to build up the body, structure and repair waste, but other things which go to furnish force and energy for the proper action of all the organs and tissues. According to this, air and water would be included, as the former is necessary to supply oxygen for union with other foods or with tissues themselves, and the latter is needed to assist in the solu-

tion and assimilation of foodstuffs, to maintain the fluidity of the body juices and to moisten the tissues effectively, and to flush out and remove waste matters and excrementitious substances whose retention gives rise to certain auto-genetic diseases. The origin and mode of handling all these should be investigated as a matter of duty and precaution.

No hygienic feeding can be done without at least a mental classifica tion according to the chemical composition of the various foods. It must be kept in mind that each group is subject to different digestive and metabolic processes, and each usually has a different office in the body. It must also be remembered that the aesthetic factor in the preparation and serving of food must be taken into account and the success in pleasing the taste and appetite has much to do with the progress and completeness of digestion. Cleanliness and neatness of food, china and napery are of great value. There is more than moral philosophy in securing a good frame of mind on the part of the patient about feeding time.

If the physician does not hold a strict regard for the physiologic process of digestion from insalivation to emulsification he falls short of being a hygienic dietician He must discriminate in the character of the food used in order to cater to the varying capacities of the different processes. He must keep in mind that in cooking meat the object is to loosen the bundles of fibrillae from each other. In vegetables we want by heat and steam to soften and rupture the cellulose envelopes of the various cells, and also that the enzymes act best at body temperature and there should be aviodance of chilling the abdominal organs while digestion is under way. While pschycotherapy may in some cases be in order he must not labor under the delusion thaat when he orders beef tea his patient is getting something to eat. He should be in possession of the fact that beef tea as ordinarily made is not a food but a stimulant on account of the meat extractives, kreatin and kreatimine, which are only products of the wear and tear of life similar to urea and uric acid. Whereas instead of this, if "whole beef tea," which consists of beef macerated or pounded and put in solution is used the patient gets something of real food value. Neither should he or his patient take unction from the idea that the admiistration of alcohol is contributing some-

thing in the way of a stimulant or food. On the other hand it should be realized that, while alcohol is a partial stimulant, it is a force liberator and consumes the body store.* Itreally helps to eliminate from the body what is wanted and needed in the way of force and its continuous use in the weak and debilitated means sooner or later physiological bankruptcy. Unless its consuming effect is rapidly replaced by a supply of carbo hydrates the risk is run of "putting the patient in a grave not dug by nature." My opinion is that alcohol is fit only for the strong and hardy who are able to resist its evil effects and who are able to spare a certain amount of energy.

Tests for air, food and water are available to all through the text books, and it is only for me in this limited article to bewail the fact that they are so seldomly resorted to as partof ourmethod in handling and forestalling disease.

We are now brought to the brief consideration of that part of prophylaxis which has to do with the destruction or modification of the exciting causes of disease. Here application is made more particularly to pathogenic causes that are responsible for most of our contagions.

I have been impressed with the difference with which the surgeon and the internal medicine man regard infections. The one is always on the alert and institutes all energies and precautionary methods for the protection of the patient and attendants. Prophylaxis is his shiboleth. Cleanliness and asepsis are his watchwords. The transmission of infection from himself to patient and from patient to nurse and doctor constitutes his leading thought. But not so with the medical man. He is slow to realize that medical infections on account of their producing results irregularly are transmissible from patient to patient and to doctor and nurse. This of course applies to the so-called non-contagious and mildly contagious diseases. Highly infectious diseases, of course, are usually subjected to rather strict rules.

It has been my observation that both in private homes and in hospital wards the system used in regard to medical infections is looser and less comprehensive than that of surgical. And yet most of the gov-

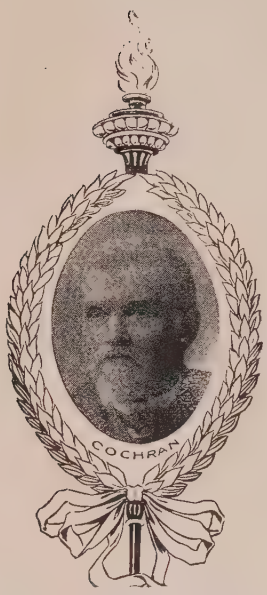
*Egberth's Hygiene and Sanitation.

erning principles are the same, the difference being that of the channel of entrance of the infection is not the same.

Considering the knowledge that we have that all diseases are in some way more or less communicable the same purposes and methods of regulation should obtain in medical wards and homes just as in surgical. True it would prove to be a more complex problem, but none the less a reasonable proposition. For instance, there are rules in hospitals and in private practice regarding the bed clothes and the food utensils of typhoid patients; but there are usually at best only indifferent regulations regarding the hands of the nurses, internes, and visiting physicians who come in contact with the cases.

There are no misgivings as to the same person preparing the food of the patient and attending to the excreta as well.. Rubber gloves nor gowns nor absolute cleaning of hands gain even a minor consideration. It is true that manifestation of the results of medical infections are less frequent than that of surgical, but the fact that they are infrequent and slow in developing has led to an insufficient and a slower appreciation of their actual importance. The surgeon so regularly gets bad results, if his methods are bad, that he has been very fortunate to see his errors and correct them. The medical man gets bad results so irregularly and slowly that their sources and real importance are not always apparent. David L. Edsoll, of the University of Pennsylvania, proved by a series of observations and experiments that secondary infections in typhoid were commonly produced by contamination of milk by careless handling. In other words, the hands that bathed the patient and handled the excretions acted as carrier of the infections not only to the patients in some instances, but to the nurses themselves. These cases of secondary infections, he also demonstrated, were the cases that in a majority of instances had hemorrhages and perforations.

So, without elaborating, I feel like advancing the proposition that many of us have a good deal to account for on account of lax methods that are wholly unhygienic. Unless we pay attention to the minutest details, we have fallen short of our duty and are unhygienic, for there is no such thing as partial hygiene. Even the vulgar habit of nose picking and finger licking, as well as the many other careless little habits that are common about the sick room should not go unnoticed,



Editorial.

W. H. BELL, M. D., Editor.

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The Work of Colonel Gorgas at Panama.

The recognition by the profession of the work done by Col. Gorgas at Panama was manifest in his election as president of the American Medical Association at the recent meeting in Chicago. Expressions of appreciation also come from other sources than the medical profession. A lay exchange in commenting on his work says: "It is not stretching the limit of praise too far to say that the most brilliant success achieved at Panama is to be credited to the work done by the army medical corps, under Col. W. C. Gorgas, in the extermination of yellow fever and malaria, and the betterment of the general sanitary conditions. When the medical corps took charge the Panama canal had become synonymous with disease and death; but today, thanks to the system introduced by the medical corps, the zone of operations is as healthful as the average city in the United States." But the facts are best told in the succinct language of the last monthly report: "The general death rate for the zone (including Panama and Colon), 20,04 per thousand, is about a fair

death rate for a healthy city of the United States. While a great many of the cities have a smaller death rate than this, a goodly number have a larger death rate. In April, 1907, we had a population of 97,815, with 334 deaths, giving us a yearly death rate of 40.97 per thousand. In April, 1908, we had a population of 116,178 with 194 deaths, giving us a rate of 20.04 per thousand; that is, with a larger population in 1908 than in 1907, we had 140 fever deaths, and the death rate was reduced just one half."

Col. Gorgas was born in Mobile in 1854. His father, Gen. J. Gorgas, was an officer of the United States army, who resigned in 1861, came south, and became chief of ordinance of the Confederate States. He received his collegiate education at the University of the South, Sewanee, Tenn., getting the degree of A. B. there in 1875. He graduated in medicine at Bellevue Hospital Medical College in 1879, and entered the army in 1880. He was health officer of the city of Havana during our first occupation of Cuba from 1898 to 1902. While he was in this position the board of which Dr. Reed was chairman made the discovery that yellow fever in nature was transmitted only by certain species of mosquito. Measures based on this discovery were first put into effect in Havana. They were promptly successful, and the city was freed from fever in the first year of this work. Col. Gorgas has been in charge of the health work at Panama since the inception of that work, or from March, 1904, to the present time. The same results have been accomplished there, and the isthmus has been freed from yellow fever, no cases having occurred there since May, 1906. The general health of the force has been so protected, that it is about as good as that of the same number of men working in the United States. For the work in Cuba, congress in 1903 passed a special bill raising Major Gorgas to the rank of colonel. As a recognition of the work in Panama, the President early in 1907 made him a member of the Isthmian Canal Commission.

Southern Medical Association.

The second annual meeting of this association will be held in Atlanta, Nov. 10-12, under the presidency of Dr. B. L. Wyman, of this city. We desire to call the attention of our readers to some of the objects of this

new association, an organization which we feel sure has a bright future and one which will exert a wide influence for good in the promotion of all that is best in scientific medicine in the South.

Many of the leading men in the South have felt for a long time the need of a scrictly Southern medical association, one which would afford opportunity for development of our Southern men many of whom are men of great ability and of high professional attainments.

To this end the association was organized at Chattanooga at a meeting of the Tri-State Medical Association in October, 1906, and at once enlisted the interest and influence of many of the leading Southern men, and entered upon a field of usefulness which we predict will increase from year to year. It now numbers among its members many of the representative medical men in the States of Tennessee, Georgia, Alabama, Mississippi, Florida and Louisiana. It is the purpose of the officers of this association to make it not only in name, but in fact a strictly Southern organization, devoted to scientific work and to the promotion of good fellowship among its members. It is in no sense antagonistic to the state association nor to the American Medical Association.

The American Medical Association has become so large a body and meets so far away from the field of labor of many southern men that comparatively few find time and opportunity to attend its meetings. In addition to this many of them feel that they are without influence in the American Medical Association and have no chance for promotion and few opportunities to present their views upon important scientific questions.

That the Southern Medical Association may accomplish the best results, the membership should be large and representative in character. To this end the officers of the association are making a strong effort to increase the membership by asking all the members of the component State associations to all allign themselves with it. We urge those of our readers who are not already members to send in their applications to the very efficient secretary-treasurer, Dr. Oscar Dowling, of Shreveport, La. The officers of the various sections are actively at work arranging the program for the next meeting in Atlanta Those who contemplate presenting papers should communicate at once with the section officers, a list of whom appears on another page of the Journal.

Personal Notes.

Dr. R. D. Jackson, of this city, and one of the oldest members of the State Medical Association, is spending the summer at Ingram Lithia Wells.

Dr. James S. McLester, 830 South Twentieth St., Birmingham, wishes to announce that he will be absent from his office for purposes of study October 1, 1907, to October 1, 1908.

Dr. B. D. Sibley announces that he has moved his office to the second floor of the First National Bank Building, rooms 227 and 228, where he will continue the practice of eye, ear, nose and throat work.

Dr. M. L. Malloy, of Eutaw, Ala., gave the Journal office a pleasant call while in the city recently. He was on his way to Baltimore, to spend several weeks at the Johns Hopkins. His wife accompanied him.

Dr V. H. Williams, of Calera, Ala., was married on June 25th to Miss Arpatia Willson of Monticello, Ark., at the home of the bride. Dr. Williams is a recent graduate of the Birmingham Medical College, and has entered upon a good practice in Calera. We extend congratulations.

PHYSICIANS ATTENTION.

Drug stores for sale on easy terms, etc., United States, Mexico, and Canada. Drug store position. F. V. Kniest, Omaha, Nebraska.

PHYSICIANS who desire to acquire a practical knowledge of the German language in a comparatively short time should apply to Professor Stahl, a native German, who comes highly recommended as an efficient instructor in German and cognate languages. Particulars given on application. Address

P. C. STAHL, 313 N. 22d St.,
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Will be glad to translate from the German to English for the benefit of medical men.

Miscellaneous Notes.

ARMY MEDICAL DEPARTMENT EXAMINATIONS, 1908.

The act of April 23, 1908, reorganizing the medical corps of the army, gives an increase in that corps of six colonels, twelve lieutenant-colonels, forty-five majors, and sixty captains or first lieutenants, and establishes a medical reserve corps as an adjunct to the medical corps. Under this recent act, the lieutenants of the medical corps are promoted to captain after three years' service instead of five, and the increase in the higher grades insures promotion at a reasonable rate all through an officer's military career. Furthermore, applicants who are found qualified in the preliminary examination are appointed first lieutenants of the medical Reserve corps and ordered to the army medical school in Washington, D. C., for eight months' instruction.

The Medical Corps.

Preliminary examination for appointment in the medical corps will be held on August 3, 1908, and formal applications should be in possession of the war department prior to *July 1st.* The applicant must be a citizen of the United States, between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, of good moral character and habits, and must have had at least one year's hospital training or its equivalent in practice. The examination will be held throughout the country at points where boards can conveniently be assembled, and due consideration will be given to the localities from which applications are received, in order to lessen the traveling expenses of applicants as much as possible.

The examination in subjects of general preliminary education may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the army medical school.

The large number of vacancies created in the medical corps by recent legislation makes it certain that *all* successful candidates will be recommended for a commission for several years to come.

The Medical Reserve Corps.

It is desired to obtain and maintain a list of qualified medical men all over the country who are willing to serve as medical officers in time of emergency, and to such men the president is authorized to issue commissions as first lieutenants, medical reserve corps. It is recognized that it will be necessary to place only a limited number of these officers on the active list in time of peace, and it is hoped that young medical men throughout the country and medical officers of the militia of the various States may be sufficiently interested to secure positions on the medical reserve corps list.

An applicant must be between twenty-one and forty-five years of age, a citizen of the United States, a graduate of a reputable medical school legally authorized to confer the degree of doctor of medicine, and must have qualified to practice medicine in the State in which he resides. Examinations will be held in the near future and will embrace the practical medical subjects.

Full information concerning the medical corps and the medical reserve corps may be procured upon application to the Surgeon General, U. S. Army, Washington, D. C.

Oxygen in Medicine and Surgery—A Contribution, With Report of Cases, by Williams Seaman Bainbridge, M. D., of New York City. (*New York State Journal of Medicine*, June, 1908.) In this contribution Dr. Bainbridge gives a very clear and exhaustive resume of the therapeutic history of Oxygen from the time of its discovery by Priestly to the present day, his purpose being to stimulate scientific interest in a subject which has so long and so generally been consigned to the realm of the pseudo-scientific and the "quack." He reviews what has been done by others in subcutaneous injections of oxygen, in intravenous infusion, in obstetrics, in gynecology, in pediatrics, in general therapeutics, and in surgery. While he has for a number of years employed the gas by various methods, in the present communication he deals exclusively with his experiments in the abdominal administration reporting a series of sixteen cases in which it has been employed by him with very satisfactory results. Cyanosis was found to be lessened, the surfaces of the

wound became redder, the pulse and respiration improved, and shock was distinctly lessened. Blood pressure was not materially influenced. Abdominal tenderness and pain were much less than often follows laparotomy, there was less nausea and vomiting, the bowels moved more readily, the appetite was better, and the patient was not so restless.

A series of animal experiments, scientific records of which were accurately kept by Dr. Harold Denman Meeker, are also detailed by Dr. Bainbridge. These experiments were made upon cats, and were conducted along the following lines:

1. To determine the absorbability of oxygen.

2. To determine its effects upon (a) blood pressure, (b) pulse, (c) respiration, (d) degree of anesthesia, (e) time of recovery after anesthesia.

3. To effect a comparison between the results upon the above when oxygen is employed and when air is employed.

4. To determine the danger-point of intra-abdominal pressure is manifested by a fall in blood pressure, respiratory embarrassment, and cardiac failure.

5. To determine the effect of oxygen upon adhesions in the abdominal cavity.

A study of these experiments leads to the following conclusions:

(1) Oxygen is completely absorbed in the abdominal cavity. (2) It is a slight respiratory stimulant. (3) It is a slight cardiac stimulant. (4) It has but little effect upon blood pressure when the pressure of the gas is moderate. (5) It tends to bring an animal quickly from deep anesthesia. (6) It hastens the recovery of an animal after discontinuance of the anesthesia. (7) A pressure of more than 1,500 mm. of water may cause collapse. (8) Oxygen tends to prevent the formation of adhesions. (9) It quickly changes a dark blood to scarlet in cases of anoxemia. (10) It stimulates intestinal peristalsis. (11) It is not an irritant to the peritoneum or abdominal viscera.

In conclusion Dr. Bainbridge evolves a scheme of possibilities for oxygen therapy. While it is not his purpose to advocate the indiscriminate and careless use of oxygen "by those whose tendency it is to follow every therapeutic will-o'-the-wisp," he wishes to stimulate practical interest in a subject which his own experience leads him to believe of-

fers more of definite good to humanity than has yet been generally utilized.

A very complete bibliography of the literature of oxygen therapy follows the article.

A PRELIMINARY NOTE ON THE DISINFECTION OF BODY CAVITIES BY INJECTION OF SUSPENSIONS OF LIVING NONPATHOGENIC BACTERIA.

Charles E. North of New York, referring to the now well-known use of lactic acid bacilli as a corrective of putrefactive processes in the intestine, suggests that the same principle can be applied to the treatment of bacterial infection in other cavities. If the immunity of any body cavity is largely dependent upon the integrity of its garrison of nonpathogenic bacteria, the question arises whether this integrity cannot be maintained and the personnel of the garrison even improved by trained reinforcements administered by the bacteriologist. Such reinforcements may be found in lactic acid preparations contained in other media than milk. Sprays of such cultures have been used with excellent results in diseases of the nose and throat and other cavities. In some of the other body cavities—the middle-ear, the vagina, and the urethra, or in sinuses and abscesses—it may be that the natural antagonisms which exist between nonpathogenic bacteria and pathogenic forms can be of therapeutic use. The suspensions of lactic acid bacteria may prove to be of service in these cavities, especially where putrefactive processes are causing the irritation.—*Medical Record,* June 13, 1908.

THE EDWARD N. GIBBS MEMORIAL PRIZE, ONE THOUSAND DOLLARS.

Subject:—The Etiology, Pathology and Treatment of the Diseases of the Kidney.

The New York Academy of Medicine announces that the sum of one thousand dollars will be awarded to the author of the best essay in competition for the above mentioned prize.

The subject of the essay, as stated, shall be, "The Etiology, Pathology and Treatment of the Diseases of the Kidney."

Essays must be presented on or before October 1st, 1909.

The three subjects mentioned in the title as above given, need not be treated with uniform fullness, but new discovery or fruitful research will be considered the standard of merit.

Each essay must be in English, typewritten, designated by a motto, or device, and accompanied by a sealed envelope, bearing the same motto, or device, which shall contain the name and address of the author.

No envelope will be opened except that which accompanied the successful essay.

The Academy reserves the right, according to the direction of the donors, not to award the prize if no essay shall be deemed worthy of it.

The Academy will return the unsuccessful essays, if claimed by their respective authors, or by authorized agents, within six months.

An essay must show originality in order to obtain the prize.

The competition is open to the members of the regular medical profession of the United States.

The original of the successful essay shall be the property of the Academy, and, according to the deed of gift, will be published in its Transactions.

The essays shall be transmitted to the committee of the New York Academy of Medicine on the Edward N. Gibbs Memorial Prize.

John A. Wyeth, M. D., President.
John H. Huddleston, M. D., Rec Sec.

New York, June 1, 1908. The New York Academy of Medicine.

THE NEW SCHOOL HYGIENE.

Geo. W. Vandegrift of New York, draws a striking contrast between school hygiene in the past and in the present. The new hygiene involves the relief of impaired physical conditions in school children. This relief cannot be accomplished by school or home treatment as long as home conditions are such as to cause and increase these effects. Some children will be truants even when all physical disability is absent. Housing conditions are found to be markedly unsanitary in the 1400 defective children examined by the Welfare Committee for School Children. Bad air at night is a potent source of physical evils. Children receive inadequate medical and dental care at home. A small number only are found to have deficient breakfasts. School sessions are too long, classes should be smaller and more physical exercise and recreation allowed.

The co-operation of parents must be secured in the correction of defects by public lectures, pamphlets, advice of family physicians and visits of municipal and private workers. The public must be educated to demand hygienic and sanitary schools, clean streets, clean milk, clean homes, and general good sanitary conditions. Physically defective children should be indexed. Teachers should be instructed so as to be able to detect physical defects, to examine eyes in the routine way with cards and thus give the school physician his time for more important details.—*Medical Record,* June 13, 1908.

TEST FOR BILE.

W. H. Buhlig, Chicago (Journal A. M. A.), calls attention to a possible source of error in the usual Gmelin test for bile. It has been the custom in some places to instruct the student to heat concentrated nitric acid with a few pieces of the wood of matches, and to heat until the fumes of the nitrogen oxids arise faintly, in this way furnishing the mixtures of nitric and nitrous acids. The acid is then poured into another clean, dry test tube and after superimposing the urine on the slightly yellow nitrous acid, the usual play of colors is looked for. An error of interpretation, not of the presence of the bile, but of the presence of albumin, is remotely possible after this manipulation. In practically every test made in this way a distinct white ring can be seen between the urine and the acid in non-albuminous urine, sometimes so marked as to suggest the Heller test and a faulty conclusion as to the albumin content is probably caused by precipitated resin from the wood by the nitric acid. The same care in diagnosis as to the presence of albumin, must be taken in this test as in the interpretation of the presence of albumin in urines containing resins from copaiba, etc., when using the Heller's test. In the latter instance the ring is usually high, being precipitated from the urine. In the Gmelin test it is usually low, coming from the nitric acid. Buhlig considers this point one of some practical importance, and he has found no mention of it in any of the textbooks on clinical diagnosis.—*Ex.*

PASSIFLORA NERVENOUS.

Daniel's Concentrated Tincture Passiflora Incarnata is unequaled as a calmative. For every trouble of a purely nervous character, or develop-

ed from nerve derangement, as drawn and jerking tendons in the limbs, it invariably proves most beneficial. Passiflora does not produce constipation, and in this virtue, recommends itself strongly to the medical profession.

Being prepared from the fresh green fruit, vine and leaf of the May-pop, it is a delightful, reliable and valuable nervine. Physicians prescribe Passiflora for nervous women, teething babies, neuralgia, hysteria, acute nervousness from excitement, fevers, etc. Preceding and during childbirth, during the menstrual period, pregnancy and the menopause, it is indispensable to tranquilize the nerves of women. A tablespoonful given at night before retiring will cure your patient of insomnia. Passiflora stimulates and quiets the nervous system without the weakening reaction incident to opiates.

MILK-FREE FLUID DIET AND RECTAL IRRIGATIONS IN TYPHOID FEVER.

A. Seibert of New York has used a milk-free fluid diet in typhoid fever in sixty-one cases at St. Francis' Hospital, with only one death. Most of the patients were convalescent much sooner than is usually the case in typhoid fever. Irrigations of the bowels were combined with the diet. The patient is given an initial dose of calomel, and is then fed on water for twenty-four hours. From that time he takes strained rice, oatmeal, or barley soup with extract of meat and egg yolk. Then other broths and zwieback are added. Hydrochloric acid is given before feeding. All the general symptoms are improved, the temperature is lowered, intestinal and nervous symptoms are improved, and complications disappear. The attack is shortened, the mortality diminished, and complications lessened.—*Medical Record*, June 20, 1908.

RECURRENT VOMITING.

Herbert Swift Carter of New York, describes the attacks of recurrent vomiting in children which presage migraine in adults. He summarizes the theories of its causation; it may be a pure neurosis, a toxic neurosis, an acidosis from vicious metabolism of fats, a toxicosis from intestinal putrefaction of proteids or a rheumatic diathesis. One thing is certain, that constipation is associated with its production and should be treated by proper diet, use of water internally, and laxatives before

the time of the attack. Vomiting should be assisted by drinking water to aid the washing out of the poisons. The prognosis of the attack is good. Everything possible should be done to improve the general health of the child.—*Medical Record,* June 13, 1908.

INFLUENZA: ITS DIAGNOSIS FROM A MORPHOLOGICAL STANDPOINT IN STAINED SPECIMENS OF SPUTUM.

Geo. W. Stiles, Washington, D. C., has so simplified the technique of examination of sputum from influenza patients that it should be possible for any practitioner to use this method of diagnosis, which will give valuable information in complicated cases of the disease. Some few cases of supposed tuberculosis are due to influenza bacilli alone or the two bacilli may be mixed in the infection and the symptoms thus modified. The examinations on which he bases his recommendations were made in the Bureau of Chemistry, of the Department of Agriculture. The specimens were dried in air and stained with methyline blue and dilute carbolfuehsin. The organism stains with difficulty, but this may be obviated by heat applied gently. Pfeiffer's bacterium is Gram negative. It may be isolated in pure culture by painting on serum agar. It is a very small, moderately plump rod, .2 to .35 by .5 to 1.6 microns in dimensions. It occurs singly, in pairs, or clusters, occasionally in distinct chains. It is aerobic, non-motile, growing best at 37° C., feebly at lower temperature. On glycerin-agar it forms minute, glistening, transparent colomes after twenty-four to thirty-six hours, which do not run together. Injection into rabbits and guinea pigs produced no effect. The author summarizes nine of the treated cases and gives a table of all treated, over a hundred in number. Three per cent. of the cases showed the presence of tubercle bacilli.—*Medical Record,* June 27, 1908.

WRITER'S CRAMP—BIERS METHOD.

Hartenberg reports his experiences with the elastic ligature in the treatment of muscular disorders such as contractions, spasms, cramps and so forth. He is a firm believer in the excellence of the method and cites by way of example the remarkable result obtained in a case of writer's cramp. The patient was a clerk, aged 35, who had suffered for 15 years. His writing was almost illegible, especially towards the end of the day, and became impossible under stress of anxiety. During fif-

teen years he had alternate periods of slight improvement and aggravation His general health was good and he was a strong man, although nervous and impressionable. Every possible method of treatment was tried without success. In 1905 Hartenberg saw the case, and advised the use of the elastic ligature, a treatment which the patient could carry out himself at home, in the depth of the country whence he had gone. It consisted of simply tying a rubber tube about the arm above the biceps for twenty minutes night and morning, so as to produce the stasis recommended by Bier. After fifteen days the patient wrote to express his gratitude for the relief obtained, and two months later wrote again to say that he was completely cured.—*Ex.*

A MILK-FREE DIET IN TYPHOID FEVER.

Cyrus L. Strong of New York, has treated seventeen cases of typhoid on a milk-free diet, and considers that his results justify its adoption. A milk-free diet eliminates one of the principal sources of danger, fermentation of undigested foods. He has used broths, crackers and zwieback, gelatin and rice. Pepsin and hydrochloric acid have not been used as a routine treatment, nor have irrigations been given. There have been less prostration, clean, moist tongue, no tympanites or diarrhea, and loss of flesh has been diminished.—*Medical Record*, June 20, 1908.

THE MEDICAL ERA'S GASTRO-INTESTINAL EDITIONS.

The Medical Era, St. Louis, Mo., will issue its annual series of Gastro-intestinal editions during July and August. In these two issues will be published between 40 and 50 original papers of the largest practical worth, covering every phase of diseases of the Gastro-intestinal canal. Sample copies will be supplied readers of this journal.

DYSMENORRHEA.

Whether a congestive, neuralgic or membranous type of Dysmenorrhea, Hayden's Viburnum Compound acts most promptly and effectively. If administered a week in advance of the flow, and its use is continued in slightly reduced doses throughout the period the excruciating pains and cramps will be relieved,

REVISION OF INTERNATIONAL CLASSIFICATION OF CAUSES OF DEATH.

Dear Doctor:

The International Classification of Causes of Death, which is intended for the purposes of morbidity and hospital returns as well as for mortality statistics, will be subjected to its second decennial revision next year. This system, formerly known as the "Bertillon system," was recommended by a committee of the International Statistical Institute during its session at Chicago in 1893. It was urgently recommended for adoption by the American Public Health Association, representing the sanitary authorities of Canada, Mexico, and the United States, in 1898. In the first revision, held at Paris in August, 1900, representatives of twenty six countries participated. It is employed by the United States Bureau of the Census, by all registration states, and by nearly all registration cities in the United States. Every country in North and South America has adopted it, and it is used by Japan, and by France, Spain, Holland, Belgium, Greece, and other European countries. It has also recently been adopted, after careful comparison with the system formerly in use, by the Bureau of Census and Statistics of the new Commonwealth of Australia.

At the recent meeting of the American Medical Association at Chicago, the House of Delegates unanimously resolved "That the International Classification of Diseases and Causes of Death be recommended for all official morbidity and mortality statistical reports." A special committee, whose chairman is Dr. Frank P. Foster of New York, is preparing recommendations for submission to the International Commission of Revision, and committees have been appointed by the various Sections of the Association and by national organizations, such as the American Academy of Medicine, the American Medico-Psychological Association, and others, to co-operate with the Association's committee. The subject of classification will be made a special topic at the approaching session of the Section on Vital Statistics of the American Public Health Association to be held at Winnipeg, Manitoba, August 25-28, 1908.

It was proposed in the resolutions adopted by the American Medical Association at Chicago, that inquiry be made as to the possibility of holding the meeting for revision at Washington in 1910, in connection with the International Congress of Hygiene and Demography, but the pre-

liminary announcement just issued by Dr. Bertillon, at the request of the Ministry of Foreign Affairs of the French Government, indicates that the year 1909 has been chosen largely to facilitate the use of the revised classification in connection with the mortality statistics of the census year 1910 in the United States. This action should be greatly appreciated, and all registration officials, health officers, hospital physicians, and the profession generally should co-operate so that the results of the revision will be thoroughly satisfactory for use in this country during the next ten years. Many suggestions from American physicians were incorporated in the first revision, but the progress of medical science and the test of practical use will indicate changes that are desirable. The system may be examined in the annual reports on Mortality Statistics, published by the Bureau of the Census, as well as in the registration reports of many states and cities. Copy of a pamphlet on "Relation of Physicians to Mortality Statistics," containing an outline of the classification, will be sent by the Director of the Census to any physician upon request, and I shall be pleased to receive any suggestions for the revision of the classification, which I will submit to the co-operating committee and to the International Commission.

Very respectfully.

Cressy L. Wilbur, M. D., Chief Statistician.

June 24, 1908.

TREASURY DEPARTMENT.

Bureau of Public Health and Marine-Hospital Service.

Washington, D. C., July 9 1908.

A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B Street SE., Washington, D. C., Monday, Sept. 14, 1908, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examination: 1, physical; 2, oral; 3, written; 4, clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination in the various branches of medicine, surgery, and hygiene.

The oral examination includes subjects of preliminary education, history, literature, and natural sciences.

The clinical examination is conducted at a hospital, and when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After four years' service assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority and after due examination as vacancies occur in that grade.

Assistant surgeons receive $1,600, passed assistant surgeons $2,000, and surgeons $2,500 a year. Officers are entitled to furnished quarters for themselves and their families, or, at stations where quarters can not be provided, they receive commutation at the rate of thirty,forty, and fity dollars a month, according to grade.

All grades above that of assistant surgeon receive longevity pay, 10 per cent in addition to the regular salary for every five years' service up to 40 per cent after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."